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CIVIL SOCIETY AND
DISARMAMENT
2016



CIVIL SOCIETY ENGAGEMENT IN
DISARMAMENT PROCESSES
THE CASE FOR A NUCLEAR WEAPONS BAN

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United Nations

Note

The United Nations Office for Disarmament Affairs is publishing this material within the context of General Assembly resolution 69/71 on the United Nations Disarmament Information Programme in order to further an informed debate on topical issues of arms limitation, disarmament and security.

This publication on civil society engagement in disarmament processes draws on recent research and reflections from literary non-fiction, academia, risk assessment, activism and advocacy to present the case for a nuclear weapons ban as a vital first step in nuclear weapons' ultimate abolition. The material appearing in this book is in unedited and original form as submitted by the authors. The views of the authors are their own and do not necessarily reflect those of the United Nations or its Member States.

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Introduction

Hibakusha's hope to ban the bomb

Kathleen Sullivan, PhD

When the last shot was fired at the end of the Second World War, the death toll and casualty rate defied comprehension. By some estimates, 60 million people died, though this does not include war-related famine and disease. In the context of Hiroshima and Nagasaki alone, the first and thus far only use of nuclear weapons in war, an estimated 210,000 died by September of 1945. But still that mountain of fatalities rises as each passing year atomic bomb survivors join the ghastly statistic through death related to radioactive exposure or injuries incurred on two singular points of time that continue to stretch beyond seven decades. World War II brought the wholesale obliteration of cities and the civilians who inhabited them, through fire bombings, massacres and nuclear war. It also brought the attempted erasure of entire populations of people, with institutions and technology of modernity fueling genocide in death camps. It is impossible to know the millions more who were wounded, maimed, disfigured, and incapacitated, both physically and psychologically, for the rest of their lives.

The world had changed. But instead of learning from the Second World War's unspeakable carnage, all manner of weapons go on proliferating. And still this age of violent modernity continues its death march relentlessly forward with the development of missile-launching drones, and autonomous weapons such as killer robots and most terrifying—the continued modernization of nuclear bombs.

Without a doubt, the most dangerous weapons in the world are nuclear. They are a threat to all life on earth. Unlike conventional bombs, they are unique in the far-reaching, long-lasting, wasteland-producing destruction these instruments of omnicide provide. Their tremendous power comes through a process called nuclear fission, the splitting of the atom—the strongest binding power in the universe ripped apart by the minds of men, and weaponized.

The primary effects of a nuclear explosion are the incredible blast, heat, fire, and radiation that produce destruction on an unimaginable scale. Immense light and thermal heat (comparable to the interior of the sun) cause a phenomenon called a firestorm. Firestorms deplete oxygen from the environment and create hurricane-like winds, which suck in debris to further feed the storm, causing super-infernos. Nothing can survive a firestorm. And all nature in its wake, the environment that supports life on earth, is laid waste.

The most insidious effect of nuclear weaponry is radiation. Once released, radioactive elements hang around for millennia upon millennia. They horribly impact the lives of any who survive in the present and put future generations at risk for cancer and genetic mutations. Due to long-lived radioactive poisoning, nuclear weapons have the ability to wage war on the future itself by altering the gene pool and threatening the continuation of life.

This we know, and still the techno-military discourse disturbingly lingers on what weapons do, who has which categories of what weapons, and how many weapons a friend or foe possesses—a scarcely disguised contest of nuclear machismo. The “peace through strength” emphasis needs to contend with what a nuclear explosion will do (and within living memory did do) to people and the planet. Thankfully, the Cold War approach that has legitimized nuclear arsenals is giving way to the moral weight of the Humanitarian Initiative.

In the last 5 years, something extraordinary has happened in an unofficial alliance between Non-Nuclear-Weapon States and Non-Governmental Organizations (NGOs) working together to achieve the abolition of nuclear weapons. After three successful state-sponsored conferences in Norway, Mexico and Austria focusing on the humanitarian impact of nuclear weapons, in December 2014, the Austrian Government unveiled the “Humanitarian Pledge” to fill the legal gap for the prohibition and elimination of nuclear weapons. It was initially supported by 127 nations, united in a call to Nuclear-Weapon

States—and those who stand with them—to begin a process leading to nuclear disarmament.

The Humanitarian Initiative is the most significant advance for nuclear disarmament in a generation.

This movement has properly reframed the issue of nuclear weapons. National posturing based on classes of weapons, deployment and deterrence credibility is being rightly replaced by the issues of humanitarian and environmental consequences. The dawn of nuclear weapons prohibition has finally arrived, as most recently evidenced through resolution 71/258 in the United Nations General Assembly with 113 States Parties voting in favor of a ban treaty process to begin in 2017.

This volume on civil society engagement in disarmament processes draws on recent research and reflections from literary non-fiction, academia, risk assessment, activism and advocacy to present the case for a nuclear ban as a vital first step in nuclear weapons' ultimate abolition.

Susan Southard, award-winning author of *Nagasaki: Life After Nuclear War*, reflects on the witness of atomic bomb survivors (hibakusha) who know intimately the horrific impacts of nuclear weapons. Recalling disarmament heydays and how non-violence and feminism created a catalyst for anti-nuclear activism, Dr. Rebecca Johnson of the Acronym Institute revisits Greenham Common as a foremother to the nascent ban treaty movement. The risk that nuclear weapons pose by their very existence is put in sharp relief by Dr. Patricia Lewis and Dr. Beyza Unal of Chatham House, where recent research has been conducted on the increased likelihood of nuclear weapons use by accident or design. Dr. Ira Helfand of the International Physicians for the Prevention of Nuclear War describes the devastating global effects of what could happen if nuclear weapons were used, even in a regional exchange with a relatively “small” number of weapons launched. Mary Olson of the Nuclear Information Resource Service unfolds the gender factor by demonstrating how ionizing radiation, manufactured over the last seventy-five years in nuclear-fuel, results in greater harm to children, and greater harm to females across the

lifespan compared to males. Dr. Nick Ritchie of York University UK makes a case for delegitimizing nuclear violence as a path towards disarmament. Finally, Reaching Critical Will's Director, Ray Acheson, provides a primer on the practical impacts of a nuclear weapons ban and the implementation of such a treaty to radically alter the social, economic, political, and legal landscape in which nuclear weapons have been allowed to exist for far too long.

Hiroshima survivor Reiko Yamada has said, "We will absolutely never give up hope." After more than 70 years into the nuclear age, the hope of hibakusha is finally being made into actionable steps by United Nations member states who will no longer be bullied by the nuclear powers who have defied their treaty obligations to "disarm at an early date". The time is upon us to fulfil that hope and ban the bomb.

Witness to nuclear war: Hibakusha in Nagasaki

Susan Southard, MFA

Even in 2017, 71 years later, the image of a mushroom cloud rising over Hiroshima or Nagasaki is what most people envision when they think of the 1945 US atomic bombings of Japan. These nuclear attacks are perceived as abstract events of the past, military directives that brought an end to the long and costly global war. But for the tens of thousands of survivors who barely escaped death beneath the mushroom clouds, the war did not end in August 1945. For them, even now, the war is not fully over.

The sheer magnitude of the nuclear blasts, along with the incomprehensible number of people killed and injured, make it difficult to grasp what the people of Nagasaki and Hiroshima experienced. But we must try. Hibakusha (“atomic bomb-affected people”) are the only people in history who have experienced nuclear warfare, and their journey of post-nuclear survival and the immediate and long-term impact of the atomic bombings have been largely ignored. The experiences of hibakusha play a critical role in understanding not only two of the most controversial military acts of the 20th century, but also current nuclear dangers throughout the world. The survivors’ stories must be heard as part of our effort to verifiably and irreversibly eliminate nuclear weapons across the globe.

When air raid alarms blared across Nagasaki on the morning of August 9, 1945, thirteen-year-old Yoshida Katsuji and six of his friends fled from their school to an air raid shelter in the hills and crouched inside. After months of Allied bombers flying over the city en route to other targets across Japan, Yoshida and his schoolmates—along with everyone in Nagasaki—had grown accustomed to piercing air raid sirens interrupting their lives day and night.

The all-clear sounded just before 11 a.m. People across Nagasaki returned to their work sites, domestic chores, lines at neighborhood ration stations, or the hillsides surrounding the city to scrounge for edible weeds. Yoshida and his friends took their time coming down from the mountain, stopping for a drink of water at a roadside well near the western edge of the Urakami Valley. Six miles above them, two U.S. B-29 bombers approached the city. This time, however, Nagasaki's air raid alarms did not blare, presumably because the planes were too high for the city's air raid defense personnel to spot, or because two aircraft alone weren't perceived as a threat. As Yoshida lowered a bucket into the well, one of the plane's bomb bay doors opened to release the five-ton plutonium bomb.

It plunged toward the city at 614 miles per hour. Forty-three seconds later, a super-brilliant flash of light lit up the summer sky, followed by a colossal explosion that rocked the city. The massive power of a single bomb crushed homes, offices, schools, and hospitals, killing and trapping family members, friends, coworkers, and neighbors for miles. The force of the blast caused people's eyeballs to pop out of their sockets and glass shards to penetrate their internal organs. Directly beneath the bomb, infrared heat rays instantly carbonized human and animal flesh and vaporized internal organs. As the heat surged outward from the hypocenter, it melted iron, steel, and human skin—and caused fires to break out across the city, resulting in conflagrations that burned people alive.

"It all happened in an instant," Yoshida remembered. Facing in the direction of the bomb, the tremendous force blast threw him backwards 130 feet, and the searing heat brutally scorched his face and body. Yoshida landed on his back in a shallow rice paddy beneath the still-rising mushroom cloud. In less than sixty seconds, a huge portion of Nagasaki had vanished, and tens of thousands throughout the city were dead or injured.

Yoshida's parents rushed into the still-smoldering city the next morning. They were among the fortunate ones who found their family members alive—or at all. After a desperate search,

they finally identified Yoshida, now unconscious, among rows of injured adults and children on a dirt field of a burned-out school where a stranger had placed him. Yoshida's parents lifted his charred, limp body into a broken baby carriage they had found in the ruins and pushed him through the blistering ashes, four and a half miles over the mountains that had protected their home from destruction.

The war ended on August 15. Within weeks, adults and children across the city began experiencing mysterious and excruciating symptoms: vomiting, fever, dizziness, bleeding gums, and hair loss. Purple spots began appearing all over their bodies—the effects of their high-dose, whole-body radiation exposure at the moment of the blast. Many died in agonizing pain within a week of the appearance of their first symptoms. Over the next nine months, pregnant women whose fetuses had been exposed in utero suffered spontaneous abortions, stillbirths, and infant deaths—and many of the babies who survived birth developed physical and mental disabilities.

Men, women, and children, in families or alone, lived in the atomic ruins surrounded by makeshift funeral pyres where bodies were burned continuously for months, engulfing the city in the stench of burning corpses. Yoshida's mother cared for him at home, using heated scissors to scrape out fly eggs and hatched maggots crawling in his burned flesh.

In December 1945, Yoshida was carried to a temporary relief hospital in Nagasaki, established in a partially-destroyed elementary school. Medicines, supplies, and fresh water were scarce, and the bodies of dead patients were carried out day and night. Soon after, he was transferred to a naval hospital 22 miles north of Nagasaki, where he received better medical care and finally regained consciousness. The left side of Yoshida's body and face began to heal. The right side of his face, however, remained scabbed and infected, and his burned right ear rotted and fell off. Three excruciating skin graft surgeries later (two of which failed), Yoshida was released from the hospital in January 1947, sixteen months after the bombing. He was fifteen.

Like countless other survivors with visible scars and disfigurement, Yoshida hid inside his house for years after the bombing, panicked at the prospect of people's stares. Meanwhile, in makeshift huts in the atomic ashes of the Urakami Valley and beyond, people cared for their injured, irradiated, and often dying loved ones, even as many of the caregivers themselves were injured or ill. For many hibakusha, the extreme psychological anguish from the instantaneous disappearance of their city and the loss of entire families and communities never lifted. Suicides were common.

Five years after the bombing, leukemia and other cancer rates among hibakusha spiked, wreaking terror among survivors. For decades, expectant parents who had been exposed to the bombs' radiation were petrified of the potential genetic effects on their newborn infants. Many hovered over their children for years, afraid that each cough or stomach ache could lead to severe illness or death. Even today, radiation scientists are actively studying second and third generation hibakusha for genetic effects potentially passed down to them from their parents and grandparents, reminding us how much we still don't understand about the insidious nature of radiation exposure to the human body.

As an older man, Yoshida wears a large black patch to cover the place where his right ear used to be; the patch is secured by a black elastic band that runs underneath his chin, up the other side of his face, and across the top of his nearly bald head. Scar tissue covers his face and neck, and his left ear is shriveled. When he smiles, his mouth is crooked, revealing severely misshapen teeth. Behind large framed glasses, Yoshida's eyes are uneven, one higher than the other.

Yoshida's survival into adulthood is the result of intense determination in the face of the chilling aftereffects of nuclear war. Since 1945, he has struggled to eat because he could barely open his mouth. His hands remain permanently curled up in fists—frozen in the position they were in at the moment of the atomic blast; for thirteen years after the war, Yoshida screamed

in pain as he held buckets filled with sand in the hope that their weight would force his fingers to straighten. It never worked.

By the time he turned eighteen, Yoshida had to find a way to help support his family. He had already begun taking short walks outside—just a tiny distance from his house at first, then a little further, always choosing a time of day with fewer people on the streets to avoid their shocked expressions when they glimpsed his face. As more able-bodied survivors were slowly rebuilding the city, Yoshida found a job in a small warehouse of a wholesale food company where he wouldn't be seen by many people. Over and over again, he questioned why this had happened to him. Why he hadn't been given the chance to hide from the bomb.

At various intervals over the next seven decades, hibakusha cancer rates continued to spike high above normal. Survivors said they felt that they had been burned “from the inside out,” and they lived in constant fear of when their time might come. Many hibakusha never spoke of their atomic bomb experiences for the rest of their lives, not only because of the trauma and sorrow their memories evoked, but also because of the shame and discrimination they would face by being identified as a survivor—particularly in marriage and employment; potential employers and marriage partners did not want to risk the possible long-term health effects from injury and whole-body radiation exposure, and potential spouses were further terrified that children of hibakusha would experience genetic effects from the radiation.

But Yoshida couldn't hide his identity as a hibakusha. He was certain that no woman would marry him—until his mother called on a relative of an in-law and asked if she would consider Yoshida as her husband. The young woman agreed, and Yoshida felt so lucky—though many years later he found out that in the early years of their marriage, his wife could not bear to look at his face as she lay next to him in their shared bed.

Starting in the mid-1950s, a small number of Nagasaki survivors defied social norms and began speaking publicly about their atomic bomb experiences. Their goals were

simple: to increase people's awareness in Japan and across the world of the immediate and long-term realities of nuclear war, and to promote the abolition of nuclear weapons. Some of Yoshida's friends were among these early activists, but Yoshida did not join them in speaking out. As much as he believed in disarmament and respected their efforts, he could not bring himself to stand in front of an audience and see people's expressions of revulsion and disgust, however unintentional, when they saw his face.

One day, a friend asked him to take his place at a talk he was scheduled to give for junior high school students visiting Nagasaki. Yoshida reluctantly agreed, but when he stood before the children and saw grimaces on their faces, he immediately regretted his decision. Some girls even began to cry. Pushing away his own tears and the grief surging through his body, Yoshida told his story. It would be years before he would do so again, until he came to terms with his disfigurement and decided to never let his shame, or his shyness, keep him from speaking out for peace.

The world's nuclear-armed nations insist that nuclear weapons exist as a deterrent to war—an irony that is not lost on hibakusha, who find it absurd and angering that nuclear weapons are declared to be instruments of peace. For Yoshida's colleague, Taniguchi Sumiteru—whose back was burned off at the time of the bombing and for more than seventy years has experienced relentless pain—there is only one meaning for the word “peace,” and it does not include nuclear weapons. “The atomic bomb,” Taniguchi says quietly, “is a destroyer of peace.”

In memory of the more than 224,000 people who died in Nagasaki and Hiroshima 71 years ago, and the countless more hibakusha who faced the terrors of post-nuclear survival, Yoshida and a small cohort of Nagasaki and Hiroshima survivors have stood before the world as witnesses to nuclear war, providing an understanding that no one else can give. They tell their stories to reduce vague notions about nuclear weapons and increase understanding of the enduring impact of nuclear war. They speak to link this understanding to how we perceive

the current state of international nuclear readiness and nuclear danger. Above all else, Yoshida and other hibakusha activists work tirelessly to ensure that Nagasaki remains the last atomic-bombed city in history.

Now, hibakusha are aging, and their voices are slowly disappearing. But their message remains urgently important. Whether by military order, accident, or an act by radical extremists, and with immensely more powerful nuclear weapons today, we are now at high risk for far worse humanitarian and environmental nuclear disasters than Nagasaki and Hiroshima. The only way to prevent such cataclysmic annihilation is the complete elimination of all nuclear weapons and the establishment of a new era without these instruments of mass terror positioned throughout the world. No other measure can achieve this goal.

NB: Parts of this chapter are adapted from Nagasaki: Life After Nuclear War by Susan Southard. Reprinted by arrangement with Viking, an imprint of Penguin Random House.

Nuclear risks: Humanitarian consequences, probabilities and mitigation

Patricia Lewis, PhD and Beyza Unal, PhD

Humans deal with risk every single moment of every day. From addressing our diets and decisions on health care, crossing the road, driving our cars, riding our bicycles and getting into an airplane, we calculate risks, assess the risk-benefit equations and make our decisions—which may be smart or foolhardy, recognizing that we rarely know until after the decision is made.

Some of those risks are daily small risks that we give little thought to because they are so frequent and a normal part of our lives. Some are much larger and more consequential—giving birth for example or participating in extreme sports—and we tend to give these far more thought. For some people, risk is a thrill and makes life worth living whereas others avoid major risks as much as they possibly can and hope that their governments and infrastructure companies do the same. A large number of studies have been made on the way humans perceive and deal with risk and many industries—particularly engineering, insurance, gambling and finance—depend heavily on understanding the risks and human interaction within those risks.

Risk is generally constructed as the product of probability and consequence. Or rather, perhaps we should say that perceived risk is the product of estimated probability and imagined consequence. Risk is not static; it is a dynamic, changing entity. Our understandings of both probabilities and consequences change all the time and those changes must be fed into regularly updated risk calculations. Unlike other areas, however, probability and consequence assessments of nuclear risks have unique aspects. The impact of nuclear weapons use and possession is not limited to quantifiable damage to infrastructure; it includes humanitarian consequences that would

undermine the course of international development, peace and stability.

New information on the consequences of nuclear weapons detonations and nuclear testing has changed risk assessment. Environmental security, food and water security, cultural heritage protection, gender equality, public health are only some of the missing factors in nuclear weapons risk calculations. Urbanization, for instance, complicates humanitarian response and increases the impact of nuclear weapons due to the numbers likely to be killed. Future trends indicate that approximately two-thirds of the world's population is projected to be urban by 2050.¹ Considering that cities are included in strategic targeting in military postures, a humanitarian catastrophe in this regard would be inevitable.

The estimated probabilities of nuclear weapons use are based on factoring a full range of issues, such as system engineering problems; numbers of nuclear weapons; explosive yields; locations; population numbers; sorties; procedures; and so on. More significantly, the number of reported near misses and errors improve risk calculations—for example, how many times the detonation of a nuclear weapon has been a hair's breadth away and humanity has been saved by the smart thinking and courage of a few individuals;² and how many times nuclear weapons could have detonated by accident or, as Schlosser points out, humanity has been saved by the failure of technology, for example the failed failsafe in the hydrogen bomb dropped over North Carolina in 1961.³

The predicted consequences of nuclear weapons explosions depend on so many factors: the population density of the area where it explodes; the yield of the weapon; the height at which it is exploded; the weather conditions; the types of buildings

¹ United Nations, *World Urbanization Prospects: The 2014 Revision*, New York.

² Patricia Lewis, Heather Williams, Benoit Pelopidas, *Too Close for Comfort: Cases of Near Nuclear Use and Options for Policy*, Chatham House, April 2014.

³ See <https://www.theguardian.com/world/2013/sep/20/usaf-atomic-bomb-north-carolina-1961>.

in the area; how many other weapons are also exploded; how much debris makes its way into the weather systems and for how long it stays in the atmosphere, etc. These consequences not only change with location and weapon systems but also the understandings and perceptions of such consequences change over time. For example, in recent conflicts, the destruction of ancient artefacts and the erasure of cultural history in the Middle East and South Asia has caused outrage. Imagine then how one nuclear weapon, in one city would destroy every statue, monument, building, art gallery and museum that had been created and held there over centuries.⁴

In recent years, there has been evidence that suggest poor procedures are in place at nuclear weapons facilities. For example, in August 2007, six US nuclear-armed cruise missiles were mistakenly placed under the wings of a B-52 plane and went missing for 36 hours in flight from Minot Air Force Base in North Dakota to Barksdale, Louisiana; the 2009 crash between the United Kingdom's HMS Vanguard and France's FNS Le Triomphant, two nuclear powered, ballistic missile-carrying submarines (SSBNs), in the Atlantic Ocean illustrated the high risk of accidents at sea; and the break-in at the Y-12 National Security Complex in 2012 by three peace activists (including an 82-year old nun Sr. Megan Rice) showed the very lax security at nuclear weapons facilities.⁵ There are many more such near-accidents, or "broken arrow" events, documented. Even more worrying are the number of times that nuclear weapons have nearly been detonated deliberately as a result of faulty information or miscalculation. Most notable have been the events in 1983 when the live NATO exercise "Able Archer" was erroneously believed to be a cover for an all-out attack against the USSR and thwarted by Lieutenant Colonel Stanislav Yevgrafovich Petrov⁶ who decided not to act on the signals

⁴ Patricia Lewis, Beyza Unal, Sasan Aghlani, Nuclear Disarmament: The Missing Link in Multilateralism, Research Paper, Chatham House, October 2016.

⁵ See reference 2 above.

⁶ *The Man Who Saved the World*, Dirs: Peter Anthony and Jakob Staberg, <http://www.themanwhosavedtheworldmovie.com>.

that clearly demonstrated US nuclear missiles on their way to Russia.

Although the recent presidential election in the United States may lead to a change in relations, there has been a marked rise of tensions between the US and Russia over Ukraine and Syria that has affected global nuclear policies, increasing the risks of nuclear confrontation. Both states and their allies appear to be embracing once again the Cold War logic of nuclear deterrence, affecting their policies and calculations. Neither of the parties is keen to reduce strategic nuclear weapons, employ transparency measures, or establish new confidence-building measures, and both countries are modernizing their arsenals.

The United States and Russia are estimated to maintain around 9,700 nuclear warheads, two-thirds of the total nuclear warheads in the world today.⁷ Around 3,800 of these warheads are deployed and 1,800 of them are in high-alert status within these two States.⁸ The high-alert status increases the probability of inadvertent nuclear-weapon detonations via intercontinental ballistic missiles (ICBMs) or submarine launched ballistic missiles (SLBMs). Recent research has shown that inadvertent use could result from technical malfunctioning that leads to false alert, or cyber-attacks to command and control systems. False-alerts, an unclassified US Department of State document suggested in the late 1970s, “are not a rare occurrence”.⁹ These occurrences pressure the system and increase the level of uncertainty when considering response; thus, they destabilize deterrence, which is based on keeping the status quo and not taking action. The risks of inadvertent or deliberate nuclear weapons use increases in times of crisis.

In the current situation, the status quo is not sustainable. The weapons systems relying on the performance of military

⁷ Hans M. Kristensen and Robert S. Norris, Status of World Nuclear Forces, Federation of American Scientists.

⁸ Hans M. Kristensen and Matthew McKinzie, Reducing Alert Rates of Nuclear Weapons, UNIDIR, January 2013.

⁹ United States Department of State, Points to the PM’s memo about the response to Brezhnev on the false-alert, Unclassified, November 16, 1979, <http://nsarchive.gwu.edu/nukevault/ebb371/docs/doc%205%2011-16-79.PDF>.

satellites and command and control systems today are additionally vulnerable to cyber-attacks. This was not a concern during the Cold War. Cyber-attacks on command and control systems, including spoofing of global navigation satellite systems (GNSS) data and taking control of missile systems are now possible if non-trivial. Drone attacks on missile bases or on submarines could overcome defences. Both of these new threats to the control of nuclear weapons could be carried out by states or even by well-resourced non-state armed groups. Cyber-attacks to command and control systems, spoofing data, by creating false information, and jamming navigational (GNSS) signals during an event of crisis—such as in Ukraine, Syria, or potentially in the Baltics—could have a knock-on effect on strategic military calculations and may increase risks of misperception.

Statements on the potential use¹⁰ of nuclear force also affect the risks of nuclear confrontation. Concerns are rising over Russia's modernization of its nuclear forces, as well as its exercises to train and test its forces while also testing the NATO Alliance's air defense capabilities. NATO, in return, conducts warfare exercises, searching for submarines in open-waters (Dynamic Manta 2016) or carrying out reconnaissance operations (Cold Response 2016). Although the parties claim that exercises are part of routine training, there is an increased reliance on nuclear operations. Integrating realistic nuclear exercises downplays the logic of deterrence and suggests increases in the probabilities of use; and thus, could affect the nuclear calculus in crisis situations. This type of nuclear signaling creates conditions that could result in deliberate or inadvertent nuclear weapons use with catastrophic consequences.

The type of missiles deployed in current conflicts also affects the risks of nuclear confrontation. Iskandar tactical ballistic missiles that Russia deployed on its border in 2013 and the current debate on empowering the status of tactical nuclear

¹⁰ UK Prime Minister Theresa May on willingness to use nuclear weapons, <https://www.youtube.com/watch?v=C9ObikPwV70>.

weapons in Europe are examples that may alter decisions in a crisis and facilitate inadvertent or deliberate use.

The use of nuclear-tipped cruise missiles in conflicts blurs the types of available responses in crisis environments. Cruise missiles deployed with nuclear warheads cannot be differentiated from conventional cruise missiles.¹¹ Thus, these weapons are inherently destabilizing.¹² When used, the recipient country would not know the nature of the attack until after the attack. During crises, states act best when they consider all options without extraordinary time pressure. Conversely, decision-making time to respond to nuclear-tipped cruise missiles is short. In a single operation, Russia launched twenty-six cruise missiles from the Caspian Sea to Syria; four of these missiles crashed on undesignated areas in Iran. Under other circumstances, it is clear that relying on conventionally-armed cruise missiles that could be mistaken for nuclear-armed warheads would be highly dangerous.

Behavioral research indicates that states are more prone to take risks when they only consider the possible positive gains rather than the possible negative consequences of their actions. Nuclear calculations should incorporate the Cold War lessons and focus on the catastrophic impacts of nuclear weapons use before it is too late.

Low consequence events, even if they are high frequency, are manageable—events that occur often, if they are low consequence, they are everyday irritants. High frequency, high consequence events are risks we cannot ignore and we take them very seriously indeed—hence all the car safety features that have been developed and the medical research that has tackled diseases such as polio, cardiovascular and cancer that reduce impact and probability of occurrence.

¹¹ Pavel Podvig, Blurring the line between nuclear and nonnuclear weapons: Increasing the risk of accidental nuclear war? *Bulletin of the Atomic Scientists*, 2016, 72:3, pp. 145-149.

¹² William J. Perry and Andy Weber, “Mr. President, kill the new cruise missile”, *The Washington Post*, October 15, 2015, https://www.washingtonpost.com/opinions/mr-president-kill-the-new-cruise-missile/2015/10/15/e3e2807c-6ecd-11e5-9bfe-e59f5e244f92_story.html.

It was in this context that the Humanitarian Impacts of Nuclear Weapons Initiative conferences in 2013-2104 brought a fresh perspective to the current range of risks associated with nuclear weapons. This “humanitarian initiative” spawned studies and projects that looked again at the consequences of the use of nuclear weapons and what the likelihood of such use might be today. The attempts to ascertain the new risks humanity faces as a result of the continuing retention of nuclear weapons has resulted in new understandings about long-term impacts on the environment and on human health—particularly on women’s health and therefore the health of their children—and on the likelihood of use as a result of understanding more about the number of near-accidents and near, inadvertent use incidents.

These new understandings have led in turn to a sense of urgency on the part of participating government and non-governmental organizations. The step-by-step process that has not made any tangible progress since the negotiation of the CTBT in 1996 has run into the ground in the Conference on Disarmament (CD) at the United Nations in Geneva. As the steps are to be taken chiefly by the nuclear-weapon states and other nuclear weapons possessors, nuclear disarmament is contingent on their political will and cooperation, which has not been forthcoming within the multilateral frameworks. Even though several governments’ statements suggest that the step-by-step process is still alive, it is hard to see how such a conclusion could be reached following 20 years of failed attempts to begin negotiations on the “next step” for a treaty to ban the production of fissile material for weapons purposes. The mandate for these negotiations¹³ was agreed in 1995 and the inability since then to find a path to treaty negotiations, despite heroic efforts by so many talented diplomats, has led to ingrained frustration with the CD and its viscosity. As a result, a number of other attempts and pathways have been tried and two are currently under development. The first of these, a “legally binding instrument to prohibit nuclear weapons leading

¹³ Ambassador Gerald E. Shannon, *The Shannon Report and Mandate*, <http://www.acronym.org.uk/old/official-and-govt-documents/shannon-report-mandate>, 24 March 1995.

towards their total elimination”,¹⁴ has gained substantial traction and negotiations under the United Nations General Assembly will begin in 2017. The idea of a legally binding instrument is to reduce and eliminate the risks of nuclear weapons use and to prohibit nuclear weapons—their possession, development, deployment, stockpiling and use for all. Most countries have already committed to these measures through their obligations under the Nuclear Non-Proliferation Treaty—in order to pave the way for further nuclear disarmament.

The second approach, which is less of a departure from current practice, is to adapt the step-by-step approach into a more fluid “progressive approach” in which the steps are no longer in any sequence and new steps, such as de-alerting measures, might be introduced.¹⁵

Whatever the outcome of these new attempts to address the hard-to-crack problem of nuclear weapons, clearly there are new concerns and new dangers. Experts may like to imagine that a nuclear conflict “would never happen” but it would be foolish to imagine that to be true. The human race has had far too much experience lately of devastating events that are considered highly unlikely to occur—catastrophic earthquakes, tsunamis, floods, fires, meteor explosions, nuclear reactor meltdowns and so on—for people to believe that a war that included the deliberate, inadvertent or accidental use of nuclear weapons is impossible. Complacency in regard to nuclear weapons—when so many are on high alert and belong to countries in conflict and when this is a man-made problem with a range of workable solutions—is hard to fathom and, should nuclear weapons ever be detonated again in conflict, would be hard to forgive.

¹⁴ United Nations General Assembly resolution 71/258 of 23 December 2016, General and Complete Disarmament: taking forward multilateral nuclear disarmament negotiations.

¹⁵ United Nations General Assembly, Open-Ended Working Group Taking Forward Bilateral Nuclear Disarmament Negotiations, 24 February 2016, A/AC.286/WP.9. See also, George Perkovich, Patricia Lewis, *The Vantage Point*, International Commission on Nuclear Nonproliferation and Disarmament, January 2009.

Climate disruption and global famine: Nuclear weapons impact on the environment

Ira Helfand, MD

During the Cold War, the enormous arsenals of nuclear weapons possessed by the United States and the Soviet Union were capable of catastrophic destruction on a global scale. A US National Academy of Sciences (NAS) study of the medical consequences of nuclear war concluded that, in a large scale nuclear conflict, several hundred million people would die directly and the subsequent famine would lead to the death of one to four billion people, most the of the earth's population at that time.

The study highlighted a key insight: “the primary mechanisms for human fatalities would likely not be from blast effects, not from thermal radiation burns, and not from ionizing radiation, but, rather, from mass starvation.”¹ Climate disruption, and the resulting disruption of food production worldwide would kill far more people than the direct effects of the nuclear explosions themselves.

With the end of the Cold War, there has been a dramatic decline in the number of nuclear warheads in the world. But the weapons remaining are still able to produce catastrophic humanitarian impacts. A 2002 study of the direct effects of a nuclear war involving post Cold War forces in the US and Russian arsenals showed that if only 300 Russian warheads got through to urban targets in the United States, 75 to 100 million people would be killed directly by the explosions, fires

¹ Harwell, M., Harwell, C., 1986: “Nuclear Famine: The Indirect Effects of Nuclear War.” In, Solomon, F., Marston, R. (eds.) *The Medical Implications of Nuclear War*. Washington, D.C.: National Academy Press, pp. 117-35.

and radiation, and the entire economic infrastructure on which the rest of the population depended would be destroyed.² A US attack on Russian cities would produce similar results.

However, as suggested by the NAS study, these direct fatalities would constitute only a small portion of the total death toll. Recent climate studies have confirmed that even the reduced number of weapons remaining in the US and Russian arsenals can produce a nuclear winter, and they have shown that this catastrophic global cooling will persist for more than a decade. A conflict involving only those weapons that will still be allowed to the US and Russia when the New START treaty is fully implemented could inject some 150 million tons of soot into the upper atmosphere dropping temperatures around the world an average of 8°C. In the interior regions of North America and Eurasia, temperatures would drop 25° to 30°C.^{3,4} In the temperate regions of the Northern Hemisphere, there would be two to three years without a single day free of frost—the temperature would drop below freezing for some portion of every day. Under these conditions ecosystems would collapse and food production would halt. The vast majority of the human population would starve and it is possible we could become extinct as a species.

It would not require a full-scale nuclear war between the United States and Russia to cause catastrophic humanitarian impacts around the world. A more limited war between the nuclear superpowers, or a war between smaller nuclear powers, such as India and Pakistan, would also cause catastrophic regional effects, worldwide climate disruption, and staggering numbers of fatalities potentially threatening the survival of human civilization. These enormous global consequences of a

² Helfand, I., Forrow, L., McCally, M., Musil, R., 2002: "Projected US Casualties and Destruction of US Medical Services From Attacks by Russian Nuclear Forces," *Medicine and Global Survival*, 7, 68-76.

³ Robock, A., Oman, L., Stenchikov, G., 2007: "Nuclear winter revisited with a modern climate model and current nuclear arsenals: Still catastrophic consequences," *J. Geophys. Res.*, 112, D13107.

⁴ Toon, O., Robock, A., Turco, R., 2008: "Environmental consequences of nuclear war," *Physics Today*, 61, No. 12, 37-42.

limited regional nuclear war are less widely understood than the effects of a larger nuclear war and deserve to be considered in some detail.

In 2007, a study by Toon et al. examined the effects of a “limited” regional nuclear war, using the example of India and Pakistan and assuming the use of only 100 Hiroshima-sized bombs, or less than 0.03% of the world’s nuclear arsenal, targeted on urban areas. They found that up to 21 million people could be killed directly by the explosions, fires, and local radiation and that the conflict would loft up to 6.6 Tg (6.6 teragrams or 6.6 million metric tons) of black carbon aerosol particles into the upper troposphere.⁵

Robock et al. then calculated the effect that this injection of soot would have on global climate, assuming a war in South Asia occurring in mid-May. Their study employed a conservative figure of only 5 Tg of black carbon particles. They found that, “A global average surface cooling of -1.25°C persists for years, and after a decade the cooling is still -0.50°C . The temperature changes are largest over land. A cooling of several degrees occurs over large areas of North America and Eurasia, including most of the grain-growing regions.” In addition the study found significant declines in global precipitation with marked decreases in rainfall in the most important temperate grain-growing regions of North America and Eurasia, and a large reduction in the Asian summer monsoon.⁶

Two additional studies, one by Stenke et al., and the other by Mills et al., each using a different climate model, have also

⁵ Toon, O., Turco, R., Robock, A., Bardeen, C., Oman, L., Stenchikov, G., 2007: “Atmospheric effects and societal consequences of regional scale nuclear conflicts and acts of individual nuclear terrorism,” *Atm. Chem. Phys.*, 7, 1973-2002.

⁶ Robock, A., Oman, L., Stenchikov, G., Toon, O., Bardeen, C., Turco, R., 2007a: “Climatic consequences of regional nuclear conflicts,” *Atm. Chem. Phys.*, 7, 2003-2012.

examined the impact on global climate of this limited nuclear war scenario and they have both found comparable effects.^{7,8}

A number of studies have subsequently attempted to estimate the impact this climate change would have on food production.

Ozdogan et al.⁹ examined the impact on corn and soybean production in the US Corn Belt, where more than 70% of US grain is produced. The calculated change in crop yield was based on the decline in precipitation, solar radiation, growing season length, and average monthly temperature predicted in Robock's study.

The calculations in this study are probably conservative, as the study did not consider two other environmental factors, which would be expected to produce a further significant decline in yield. It did not factor in the increase in UV light secondary to ozone depletion, and, perhaps more importantly, it did not consider daily temperature extremes, which may lead to complete crop failure.

Despite this conservative bias, the study shows very significant declines in both corn and soybean production. Averaged over 10 years, corn production would decline by 10% at all four sites. But there would be a great deal of variation from year to year, and losses would be most severe in year 5, averaging more than 20%. For soybeans the decline in production would be about 7%. Again, the losses would be most severe in year 5, averaging more than 20%.

In a separate study, Xia and Robock¹⁰ examined the decline in Chinese middle season rice production in response to this

⁷ See <http://www.atmos-chem-phys-discuss.net/13/12089/2013/acpd-13-12089-2013.html>.

⁸ Mills, M., Toon, O., Taylor, J., Robock, A., 2014: "Multi-decadal global cooling and unprecedented ozone loss following a regional nuclear conflict," *Earth's Future*, **2**, 161-176.

⁹ Ozdogan, M., Robock, A., and Kucharik, C., 2013: "Consequences of a regional nuclear conflict for crop production in the Midwestern United States," *Climatic Change*, **116**, 373-387

¹⁰ Xia, L., Robock, A., 2013: "Impacts of a nuclear war in South Asia on rice production in mainland China," *Climatic Change*, **116**, 357-372.

5 Tg event. This study used a different crop model, which also considered changes in monthly precipitation, solar radiation and temperature. Like Ozdogan's study it did not consider the effect of UV light increases or daily temperature extremes, or the possible decline in available fertilizer, pesticide and gasoline. Again, despite this conservative bias, the study showed a significant decline in Chinese middle season rice production. Averaged over 10 years, the shortfall would be 15.1 million metric tons per year, about 12% of the total crop. In the case of Chinese rice production, the decline would be most severe in the first 3 years.

The impact on rice production was found to vary widely by province. In some areas in the South and East of China, production would actually rise. For example, in Hainan, rice yield would increase by 5% to 15% per year.

In other areas to the North and West, the decline would be much more severe than the national average. In heavily populated Sichuan, the decline would average about 50% over the ten-year period and in the first two years after the war it would be greater than 60%, rising to a 90% decrease in the 3rd year. These regional variations would, at the very least, cause severe distribution problems.

In a follow up 2013 study, Xia, Robock and their colleagues looked at the impact of the climate change on rice, maize and, wheat production in China following limited nuclear war.¹¹ For this study, they used the 2007 climate change projections by Robock et al. that were used in the earlier studies of US maize and Chinese rice production, and also the subsequent climate projections of Stenke et al. and Mills et al. There were some variations in the crop outputs found using the different climate models, but they all showed significant declines in crop size. For maize, the average decline was about 16% over a full decade. For middle season rice, the projected decline was somewhat larger than in their earlier estimates: 20%

¹¹ Xia, L., Robock, A., Mills, M., Stenke, A., Helfand, I., 2015: "Decadal reduction of Chinese agriculture after a regional nuclear war," *Earth's Future*, 3, 37-48.

for the first 5 years and 17% over the course of 10 years. The most disturbing new projection related to the Chinese winter wheat crop, which is usually just a little bit smaller than middle season rice crop. The effect on winter wheat was much more severe, averaging about 39% for the first 5 years and 31% for a full decade. In the first year, the projected decline in winter wheat was more than 50%.

Declines in food production of the magnitude suggested by these studies would have a major impact on human nutrition. As of September 2016, the United Nations Food and Agriculture Organization estimated that world grain reserves would be 664 million metric tons in 2017. Expressed as days of consumption, this reserve would last for only 92 days.¹² Furthermore, the United Nations Food and Agriculture Organization estimates that in 2016 there are 795 million people in the world who already suffer from malnutrition.¹³

Given this precarious situation, even small further declines in food production could have major consequences. The large and protracted declines in agricultural output predicted by Ozdogan and Xia are unprecedented in modern times, and the full extent of their impact on human nutrition are difficult to predict.

Normally a decline in agricultural production affects food consumption by raising the cost of food; the decline in “accessible” food, the amount of food that people can afford to buy, is much greater than the decline in “available” food, the actual agricultural output. The impact of rising food prices is, of course, felt disproportionately by people who are already malnourished precisely because they cannot, at baseline prices, afford to buy enough food.

At the time of the great Bengal famine of 1943, during which three million people died, food production was only 5% less than it had been on average over the preceding five years, and it was actually 13% higher than it had been in 1941

¹² See <http://www.fao.org/worldfoodsituation/csdb/en/>.

¹³ See <https://www.wfp.org/hunger/stats>.

when there was not a famine. But in 1943, after the Japanese occupation of Burma, which had historically exported grain to Bengal, the decline in food production was coupled with panic hoarding and the price of rice increased nearly five fold, making food unaffordable to large numbers of people.¹⁴ These two factors, hoarding and the severe increase in rice prices, caused an effective inaccessibility of food far more severe than the actual shortfall in production.

We would have to expect panic on a far greater scale following a nuclear war even if it were a “limited” regional war, especially as it became clear that there would be significant, sustained agricultural shortfalls over an extended period.

It is probable that there would be hoarding on an international scale as food exporting nations suspend exports in order to assure adequate food supplies for their own populations. In the last decade and a half there have been a number of examples of nations banning grain exports. In September 2002, Canada, faced with a sharp decline in wheat production because of drought conditions, suspended wheat exports for a year. The next year, the European Union took similar action, as did Russia. And in August 2004 Vietnam indicated it would not export rice until the following spring.¹⁵ India banned rice exports in November 2007, which, followed by restrictions on rice export in Vietnam, Egypt, and China in January 2008, contributed to historic increases in world rice prices. In 2010, Russia, responding to the severe drought conditions that year again suspended grain exports.¹⁶ In the event of a regional nuclear war, the grain exporting states would be faced with major crop losses and the prospect of bad harvests for the next several years. It is probable that they would take similar action, and refuse to export whatever grain surplus they might have, retaining it instead as a domestic reserve. It is also probable that there would be widespread speculation on agricultural markets.

¹⁴ Sen, A., *Poverty and famines*. Oxford: Oxford University Press. 1981.

¹⁵ Brown, L., 2010: *Outgrowing the Earth*. New York: WW Norton & Co.

¹⁶ Khrennikov, I., 2010: “Medvedev orders review of Russian grain export ban at harvest end.” See <http://www.businessweek.com/news/2010-10-04/medvedev-orders-review-of-russia-grain-export-ban-at-harvest-end.html>.

Even if we do not take into account the way that rising food prices exacerbate the effects of a fall in food production, the declines in available food predicted by Ozdogan and Xia would be devastating.

For the 795 million people who are currently malnourished, the majority of their caloric intake is derived from grain. For example, in Bangladesh the figure is about 78%. We cannot know with certainty that a 10%-20% decline in grain production would translate directly into a 10%-20% decline in grain consumption for all 795 million. For example, some of the malnourished are subsistence farmers who live in areas where grain production might not decline. But we do know that the chronically malnourished cannot survive a significant, sustained further decline in their caloric intake. With a baseline consumption of 1,750 calories per day, even a 10% decline would lead to an additional deficit of 175 calories per day. While many of the malnourished might survive the first year, it is realistic to fear that they would not survive if these conditions persisted for a decade.

The agricultural disruption caused by a limited nuclear war would also pose a threat to the several hundred million people who enjoy adequate nutrition at this time, but who live in countries that are dependent on food imports. The nations of North Africa, home to more than 150 million, people import more than 45% of their food.¹⁷ Malaysia, South Korea, Japan and Taiwan, as well as a number of countries in the Middle East, import 50% or more of their grain.¹⁸ The anticipated suspension of exports from grain growing countries might cause severe effects on nutrition in all of these countries. The wealthier among them might initially be able to obtain grain by bidding up the price on international markets, but as the extent and duration of the crop losses became clear, exporting countries would probably tighten their bans on exports threatening the food supplies of all these importing countries.

¹⁷ See www.ers.usda.gov/publications/gfa16/GFA16CountryTablesNAfrica.xls.

¹⁸ See www.iucn.org/themes/wani/eatlas/html/gm19.html.

In addition, there are some 1 billion people in China who have not shared in the economic growth of the last three decades and would have great difficulty buying food given the major shortfalls in Chinese food production that are projected.

Combined with the 795 million people who are currently malnourished, and the populations of food importing countries, this would place the number of people potentially threatened by famine at well over two billion.

Two other issues need to be considered as well. First, there is a very high likelihood that famine on this scale would lead to major epidemics of infectious diseases. The prolonged cooling and resultant famine in 536-545 AD was accompanied by a major outbreak of plague, which developed over the next half century into a global pandemic.¹⁹ The famine of 1816 triggered an epidemic of typhus in Ireland that spread to much of Europe²⁰ and the famine conditions in India that year led to an outbreak of cholera that has been implicated in the first global cholera pandemic.²¹ The well-studied Great Bengal Famine of 1943 was associated with major local epidemics of cholera, malaria, smallpox and dysentery.²²

Despite the advances in medical technology of the last half century, a global famine on the scale anticipated would provide the ideal breeding ground for epidemics involving any or all of these illnesses. In particular, the vast megacities of the developing world, crowded, and often lacking adequate sanitation in the best of times, would almost certainly see major outbreaks of infectious diseases; and illnesses, like plague, which have not been prevalent in recent years, might again become major health threats.

Finally we need to consider the immense potential for war and civil conflict that would be created by famine on this

¹⁹ Keys, D., *Catastrophe*. London: Century. 1999.

²⁰ Stommel, H., *Volcano weather: The story of 1816, the year without a summer*. Newport, Rhode Island: Seven Seas Press. 1983.

²¹ Stommel, H., Stommel, E., 1979: "The year without a summer". *Scientific American*. 240:176-1869

²² Sen. *op. cit.*

scale. Within nations where famine is widespread there would almost certainly be food riots, and competition for limited food resources might well exacerbate ethnic and regional animosities. Among nations, armed conflict is a very real possibility as states dependent on imports attempt to maintain access to food supplies.

It is impossible to estimate the additional global death toll from disease and further warfare that this “limited regional” nuclear war might cause, but, given the world-wide scope of the climate effects, the dead from these causes might well number in the hundreds of millions.

Conclusion

The newly generated data on the decline in agricultural production that would follow a limited, regional nuclear war in South Asia support the concern that more than two billion people would be in danger of starvation. Epidemic disease and further conflict spawned by such a famine would put additional hundreds of millions at risk. Death on this scale would not mean the extinction of our species, but it would almost certainly mean the end of modern industrial civilization. No civilization in human history has withstood a shock of this magnitude and there is no reason to expect that ours would either.

Human consequences of radiation: A gender factor in atomic harm

Mary Olson

Ionizing radiation,¹ no matter the source and no matter the amount, can harm living organisms. While living on Earth entails exposure to naturally occurring radiation, something new began with the dawn of nuclear weapons. The humanitarian consequences of nuclear weapons include harmful impacts from the ionizing radiation they release.

Nuclear weapons kill immediately with heat and blast. Nuclear war's largest near-term death toll would be from famine as a result of climate disruption.² Any nuclear explosion also emits ionizing radiation so intense that bodies are literally cooked if not shielded. Ionizing radiation exposures may also burn and produce the syndrome called "radiation sickness". Yet, even a single radioactive emission, so small it cannot be detected, may strike a living cell; over time, the resulting damage may become a fatal cancer.³ Therefore, regulators acknowledge that there is no safe radiation exposure-level above zero.

The fundamentals about radiation bring the obligation to extend the findings in this paper on gender to people suffering chronic, lower levels of exposure from the weapons-uranium

¹ Energy and particles emitted from the nucleus of an unstable atom when in contact with living tissue may knock an electron off of a molecule, producing a charged ion; thus "ionizing" radiation. Ionization is only one type of impact that radioactivity (particles and rays) may produce in living cells.

² See the article in this publication by Ira Helfand, entitled "Climate disruption and global famine: Nuclear weapons impact on the environment" on p. 16.

³ Dr. Helen Caldicott, 1994, *Nuclear Madness*, WW Norton and Co.

fuel chain, plutonium production and processing as well as the wastes and residues from making and testing nuclear weapons. The regulations in place today do not reflect the findings here.

Nuclear-weapon fuel production, processing, testing and the use of nuclear weapons have already poisoned soils, waters and workers, scattering radioactive fission products far and wide. Biologically harmful radioactive particles mix into rain in the clouds, falling into rivers and fields, then sucked up by crops and eaten by grazing livestock, thereby exposing the general population including people of all ages to ionizing radiation.

Regulation of public radiation exposure is deeply rooted in the atomic history of the 20th century. The development of nuclear weapons involved sending large numbers of military and paramilitary personnel into areas that were restricted to the general public. The first regulations were naturally based on these people, primarily male, all adult. The attempt to limit radiation exposure among this group gave rise to the “Standard Man” metric, a set of body parameters that was adopted by regulators, along with a specified age, ethnicity and lifestyle,⁴ collectively referred to as the “Reference Man”.⁵ There is no documentation of an evaluation or policy review to determine whether it was appropriate to extend this same regulatory basis, using Reference Man, to the general population; it was simply done.

Seventy-five years of this uncontrolled, worldwide experiment of mixing fission products and Life, has produced results that are chaotic. Cancers do not appear immediately⁶ and when they arrive, they rarely bear a tag announcing the cause.

⁴ Reference Man is used by the International Committee for Radiological Protection, and its antecedents in nations around the world. The official definition as adopted in 1974 is posted by the Institute for Energy and Environmental Research here: <http://ieer.org/wp/wp-content/uploads/2009/01/definition-of-reference-man.pdf>.

⁵ As of January 30, 2017, the US Nuclear Regulatory Commission’s “Standards for Protection Against Radiation” US Code of Federal Regulations Chapter 10, Part 20 include 8 separate references to “Reference Man” including the definition of “annual allowable intake” for radionuclides.

⁶ Cancer arises from damage to cells. Often the damage sits for years and even decades, known as the “latency period”. In the case of childhood

It took 60+ years after the first radiation exposures from nuclear weapons for the public to ask: “Is harm from ionizing radiation uniform across the human⁷ lifecycle?” and “Are age and gender factors in harm caused by ionizing radiation?” And specifically, “Is there a Gender Factor in the degree of harm from a fixed level of ionizing radiation exposure?”

In order to address questions like these with respect to long-term consequences like cancer, it is necessary to look at a very large population to find a “signal in the noise” of data. Even more fundamental is that the data-set must itself include all ages and both genders to find an answer to questions on the disproportionate impact of ionizing radiation tied to age and gender. There is only one such body of data that has been published: the Lifespan Study of the A-Bomb Survivors of the 1945 nuclear attack by the United States on Hiroshima and Nagasaki, Japan.

In 1949 the United States sent researchers to study the people who survived the A-Bombs, the hibakusha. These American researchers offered no treatment or other medical assistance.

From the A-Bomb survivors we now know: gender and age matter, greatly, in the outcome of ionizing radiation exposure. Because gender and age have not been factored into official evaluations of radiation impacts to date, harm to human populations has been systematically under-estimated and under reported even while ionizing radiation has spread world-wide.

The following are findings of a simple numerical analysis of the gender and age aspects of the A-Bomb Survivor Lifespan Study data as published in 2006 by the (US) National Academy of Science (NAS).⁸ All the data collection was performed by the

cancer, the damage may have been done either prior to birth, or, even prior to conception in radiation exposure to either parent.

⁷ This paper does not address issues of reproduction, or barriers to it. The term “human lifecycle” here refers to males and females between birth and death.

⁸ NAS 2006. Biological Effects of Ionizing Radiation [BEIR VII, Phase Two] posted on-line: <https://www.nap.edu/read/11340/chapter/1#v> and for

Atomic Bomb Casualty Commission, and later the Radiation Effects Research Foundation. NAS compiled and reported the population data. The data is gender-disaggregated, but the NAS authors do not present a gender analysis.

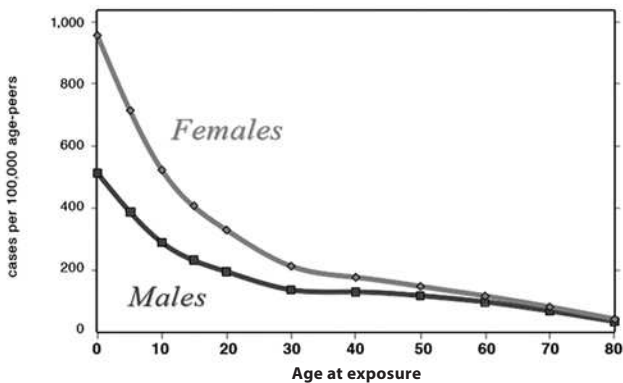
The data published in 2006 is unique. The survivors of Hiroshima and Nagasaki were grouped by the age they were at the time of the bombing. These groups were tracked over their lifetimes. Cancers and cancer deaths were counted. More than 100,000 survivors form the data-set, people of all ages and both genders, tracked for 60 years.

We can broadly say that those who were five years or younger in August 1945 were most likely to suffer cancer at some point in their lives.

Taking a fixed exposure level and then comparing the age of exposure in each biological gender, we see that young girls (birth to age 5) were twice as likely to get cancer as boys in the same age cohort.

Graph 1

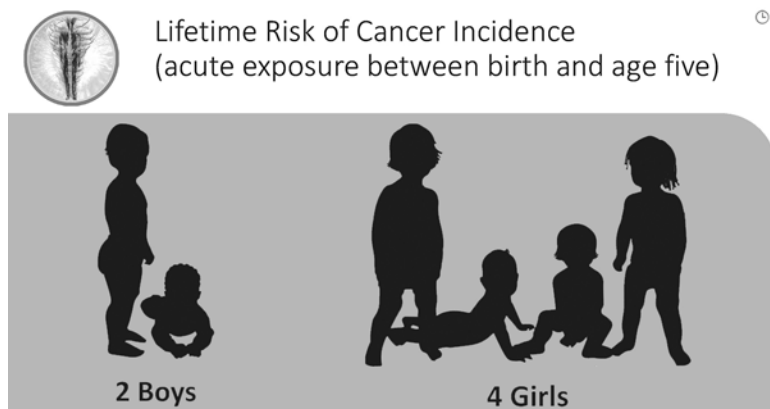
Increased Cancer Risk by Age at Exposure to 20 mSv Radiation



Data Source: U.S. National Academy of Sciences BEIR VII Phase 2 Risk Model

For every male in the birth-to-5 years cohort that suffered cancer at some point in their lives, two females got cancer.

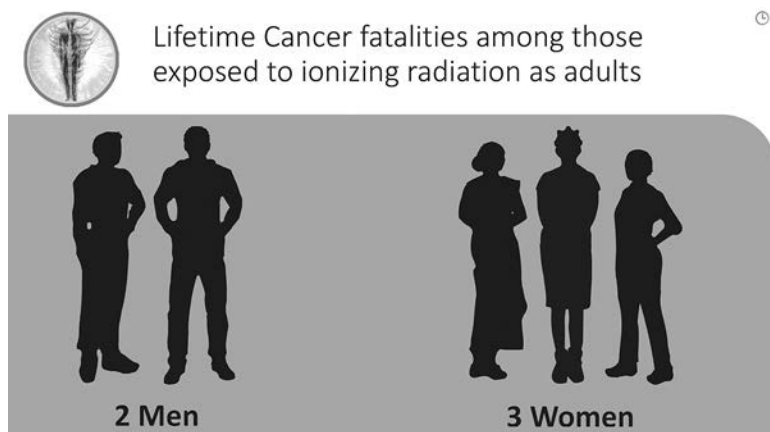
Figure 1



The cancers caused by radiation exposure in childhood do not all appear in childhood; indeed the harm is expressed across the lifetime.

For those who were adults in 1945, there is also a gender factor. Over their lifetime, women exposed to radiation as adults suffered 50% more cancer: for every two men in the age cohort who died of cancer, three women died of cancer.

Figure 2



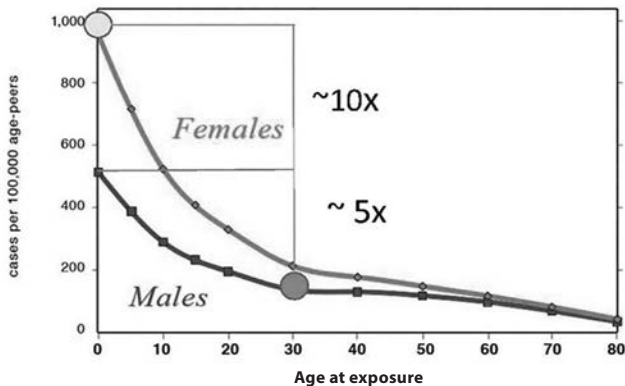
These ratios of impact—double the likelihood of harm to girls compared to boys and a 50% higher likelihood of harm to women compared to men—are deeply meaningful to women. It is very important to note that ionizing radiation can cause harm in males, and that it is more likely to cause harm in females.

Graph 1 is a snapshot of the human cancer-response to a fixed level of ionizing radiation exposure. It clearly shows that adult males are harmed by ionizing radiation, and also that they are the least harmed.

Cancer rates in the cohort of females who were exposed when they were aged birth-to-5, are almost 10 times higher than the rate of cancer in the cohort of males who were 30 years old, the age of the Reference Man, in August 1945. This is a difference that is nearly a full order of magnitude.

Graph 2

Increased Cancer Risk by Age at Exposure to 20 mSv Radiation



Data Source: U.S. National Academy of Sciences BEIR VII Phase 2 Risk Model

Radiation harm to males is also underestimated when only the adult male is considered. As can be seen in Graphs 1 and 2, cancer resulting from radiation exposure to boys (birth-to-5 years) is five-times higher than the rate for 30-year-old men. The Reference Man does not represent the harm to males across their lifespan.

Gender and age, particularly when combined, are potent factors influencing the outcome of radiation exposure. This disproportionate harm to children and females is currently invisible to decision-makers. These insights, garnered from the lives of the Japanese A-Bomb survivors, change our understanding of the humanitarian consequences of making, testing and using nuclear weapons and, indeed, any exposure to ionizing radiation.

Now we can say: radiation exposure is not “one-size-fits all”. In order to gauge possible harm from radiation, one must also know the age at the time of exposure, and the biological gender of those exposed. “Traditional” analytical methods for assessing radiological harm result in a serious underestimation of real suffering and societal cost.

Further inquiry is required in order to understand the biological basis of disproportionate harm to females from radiation exposure, but in the context of the development, testing and use of nuclear weapons that has resulted in broad distribution of fission products and subsequent exposure to the general population, the information we have now points to clear humanitarian consequences that can only be prevented by elimination of nuclear weapons and the industrial base upon which they rest.

The Principle of Precaution urges protective action be taken now, before (and during) further research. Women and children require greater protection from ionizing radiation than is currently afforded to them. Protection and prevention of unnecessary radiation exposures, particularly in early childhood, will contribute to greater health now and in the future. The gender factor in harm due to ionizing radiation raises a moral dimension that has not been considered before in decisions related to the continued stockpiling, production, testing and the ongoing possibility of use of nuclear weapons. In addition, the regulation of radiation, rooted as it is in the Manhattan Project and the Cold War, must also be updated worldwide, or risk perpetuating the same humanitarian consequences, albeit primarily at a chronic rather than acute level of exposure.

There are many locations today where children are born into contaminated environments. In such areas, over time, the populations become composed of people who were all exposed as children. The data from Hiroshima and Nagasaki tell us that radiation exposure in early childhood will extend across the lifetime as a higher likelihood of cancer. Cancer is not the only outcome of radiation exposure; it is the one that the researchers tracking the A-Bomb survivors focused on.

Other questions must also be addressed:

- Is there a gender factor in harm from internalized radioactivity? Internalized radionuclides release charged particles and energy waves inside the body, directly to tissue. These originate from the contaminated biome where inhalation and ingestion of radioactivity is nearly unavoidable. The A-Bomb Survivor Lifespan Study is based on a single, acute exposure to a large group; “excess” cancers in that population are studied in relation to that shared event. The data-set does not afford analysis of biological gender or age with respect to internalized radiation. Certainly these questions must be asked, and answered.
- The A-Bomb Survivor Lifespan Study includes only those who survived the first 4-5 years after the bombs. The survivors made it, against all odds, to be alive when the study began. Those who were lost in the first years likely included people more sensitive to radiation. There is also no data on radiological impacts on the development and viability of embryo, fetus and birth.

Conclusion

Ignorance of the disproportionate impacts of ionizing radiation across the human lifecycle have resulted in underestimation of the radiological consequences of the production, testing and use of nuclear weapons. Humanitarian action is needed to redress the many injustices and health consequences that are unfolding in the wake of the decision to utilize nuclear explosions on our planet.

It is time to heed the teachings in the atomic ashes of Hiroshima and Nagasaki—ionizing radiation inflicts disproportionate harm on children, and girls are twice as likely to suffer than boys. Harm inflicted in childhood persists over the lifetime⁹ and is expressed as disease (cancer) in adulthood. There is a gender difference in cancer-rates from a fixed dose of radiation, no matter the age of exposure. In adults the difference is less marked than in children, but still measurable even in elders.

This evidence about radiation harm must now be applied in a reevaluation of relevant policies. The use of a Reference Man in radiation regulation must end. Finding these patterns does not make them new. Seventy-five years of underestimation of radiation harm resulting from the exclusive use of data and assumptions based on adult males should be evaluated in terms of the hidden humanitarian costs of the nuclear weapons arsenals. Humanitarian principles require that children and women be fully considered and appropriately protected.

We do not yet know what causes biological gender to change the outcome of exposure to radiation, but clearly that is a question worthy of an answer. A humanitarian response is first to protect and prevent, and then to study and change policies to reflect these realities. The harm is not invisible. It is society that has been blind.

⁹ See endnote xiii, Olson, and unpublished draft of paper for GS10 (May 2017, Tokyo Japan).

Banning the bomb: From 1950s activism to the General Assembly via Greenham Common

Rebecca Johnson, PhD

The 1950s slogan “Ban the Bomb” was given new purpose on 27 October 2016 when 123 United Nations Member States voted in the First Committee for draft resolution “L.41”¹ on “Taking forward multilateral nuclear disarmament negotiations”, thereby agreeing to start negotiations in 2017 on “a legally binding treaty to prohibit nuclear weapons, leading towards their total elimination”. More than 71 years since two atomic bombs destroyed the cities of Hiroshima and Nagasaki in 1945, the world stands on the threshold of banning nuclear weapons. Drawing lessons from history, this chapter looks at early efforts to ban nuclear testing, the networked humanitarian campaigning in the 1980s that brought about the 1987 Intermediate-Range Nuclear Forces (INF) Treaty, with particular emphasis on the Greenham Common Women’s Peace Camp, and the growing international campaign to ban nuclear weapons (2010 to the present).

There have been three notable surges in nuclear disarmament activism: the 1950s, when governments and civil society pushed for the global step of a Comprehensive Nuclear-Test-Ban Treaty (CTBT); the 1980s, when opposition to new types of nuclear missiles inspired the development of new forms of non-violent, feminist and ecological campaigning that led from the interim demand to ban a particular class of nuclear war-fighting weapons to interrelated campaigns against all forms of patriarchal violence and oppression; and the post-2010 humanitarian initiatives to prohibit all nuclear weapons as the

¹ This draft resolution was adopted by the General Assembly as resolution 71/258 on 23 December 2016.

next feasible step to build stronger norms and conditions for effective disarmament and non-nuclear security, leading to the irreversible elimination of all nuclear arsenals.

The 1950s Ban-the-Bomb campaigns developed in reaction to the devastation of Hiroshima and Nagasaki and the contaminating mushroom clouds that punctuated the escalating nuclear rivalry between the United States and the Soviet Union. Movements were mainly initiated in the West, led by scientists, left-leaning political groupings and peace organizations. Pugwash and the Bulletin of the Atomic Scientists (custodians of the “doomsday clock”) started at this time. The Women’s International League for Peace and Freedom (WILPF, founded in 1915) networked across the world to bridge East-West divides, and were instrumental in the 1961 United States Women’s Strike for Peace that is credited with influencing the Kennedy Administration to pursue a nuclear weapons test ban.

The United Kingdom’s Campaign for Nuclear Disarmament (CND) was founded in 1958 after Britain joined the United States–Soviet nuclear club with a series of nuclear tests in Australia and the Pacific. CND organized widely-supported public marches between London and the Aldermaston atomic weapons factory 50 miles away, in close cooperation with the Committee of 100 which encouraged sit-downs and blockades of nuclear facilities. CND’s logo,² designed by Gerald Holtom to depict the semaphore signals for N (nuclear) and D (disarmament) contained in a circle (symbolizing birth and life), remains a potent peace symbol, familiar across the world.

Soon after France joined the nuclear club in 1960, and less than a year after the Cuban Missile Crisis, United States, Soviet and British leaders abandoned efforts to achieve a Comprehensive Nuclear-Test-Ban Treaty (CTBT) and settled for the 1963 Partial Test Ban Treaty (PTBT), which prohibited nuclear explosions in the atmosphere, underwater and outer space. Five years later, after China had begun nuclear testing and several others had embarked on national nuclear weapons programmes, the 1968 Non-Proliferation Treaty (NPT) was

² See <http://www.cnduk.org/about/item/435-the-cnd-symbol>.

concluded. This did not prohibit nuclear weapons, but enshrined a weakly worded “good faith” obligation in Article VI to pursue nuclear disarmament negotiations.

The NPT was essentially an agreement to close the proliferation door to those who had not yet crossed the threshold. It created a special category defined as “nuclear-weapon States” (NWS), encompassing the five States that also enjoyed permanent seats on the United Nations Security Council.³ The NWS’ obligations focused mainly on not transferring weapons or their technologies, with no verification requirements, contrasting starkly with the explicit undertakings required from non-nuclear governments not to acquire, manufacture or receive assistance or technology to develop nuclear weapons. In addition to its nonproliferation provisions in Articles I to III, the NPT encouraged developments in nuclear technologies for “peaceful purposes” and permitted “peaceful nuclear explosions” in Articles IV and V. Regarded as the most that could be achieved in the cold war 1960s, the PTBT and NPT were partial agreements at best. Though presented as steps to disarmament, their overriding purpose was to safeguard the perceived advantages and military-technological interests of the major nuclear possessors. Though the treaties’ preambles contained aspirations and desires to prevent further environmental contamination, human devastation and nuclear war, it soon became apparent that disarmament was being displaced by “nonproliferation” as a viable goal. Non-nuclear nations and civil society made efforts to emphasize that disarmament and nonproliferation were two sides of the same coin, and to equate “vertical proliferation”—the growth and modernization of nuclear arsenals—with the spread of nuclear weapons horizontally (to further States).⁴ Nonetheless, the structure of the NPT and powerful interests involved in the nuclear-military establishments of defined NWS ensured that arms control and nonproliferation were framed as “realist”

³ China, France, Soviet Union (later Russia), United Kingdom and United States of America.

⁴ See Rebecca Johnson, *Unfinished Business: The negotiation of the CTBT and the end of nuclear testing* (UNIDIR 2009).

practical endeavours, while real disarmament, meaning the prohibition and elimination of nuclear weapons and not just the management of lower numbers, was dismissed as an idealist and utopian “ultimate goal” in the never-never land of world peace and total harmony.

The Viet Nam War and the reduced visibility of the nuclear arms race after 1967 contributed to the waning of nuclear disarmament activism. Détente in the 1970s enabled bilateral United States–Soviet treaties that partially limited strategic offensive missiles, anti-ballistic missiles and the permitted size of underground nuclear testing. These arms control agreements facilitated the management of nuclear arsenals, as well as the cold war relationship, while underscoring the power relations that allowed the five NWS to carry on designing and producing new types of nuclear weapons.

This convenient arrangement was fundamentally challenged in the 1980s. The catalyst was Moscow’s forward deployment of SS20 missiles, which NATO met with a decision on 12 December 1979 to deploy a new generation of state of the art intermediate-range cruise and pershing missiles, starting with the United States Air Force base at Greenham Common, 60 miles west of London.⁵ Others would be deployed in Germany, Netherlands, Belgium and Italy.

These deployments of weapons seemed more suited to first-use decapitation strikes than the mega bombs associated with mutual assured destruction (MAD) “deterrence” doctrines. As such, they were viewed as a dangerous escalation likely to exacerbate United States–Soviet hostilities and undermine crisis instability. From United States Generals to people in supermarkets, there was talk of a nuclear “third world war”. As several governments distributed civil defence advice, such as the United Kingdom’s notorious “Protect and Survive” pamphlet, the stage was set for a resurgence of disarmament action.

⁵ Greenham Common was nominally a Royal Air Force base, requisitioned during the 1939–45 War, and then leased for use as a nuclear base by the United States Air Force. See David Fairhall, *The Story of Greenham Common Ground*, IB Tauris, 2006.

Protesters demonstrated across Europe, while an unprecedented million marchers were mobilized in June 1982 by the SANE-FREEZE coalition, which called for a freeze on existing United States and Soviet nuclear arsenals pending further strategic arms reductions.

This period saw the re-energizing of established organizations like Pugwash and CND as well as the emergence of professional groups like the European Nuclear Disarmament (END) network and the International Physicians for the Prevention of Nuclear War, which won the 1985 Nobel Peace Prize for its joint leadership by both American and Soviet doctors to highlight the shared humanitarian consequences of nuclear war. Most significantly, however, was the new generation that rose up and challenged the nuclear-military establishments that made ever more nuclear weapon types to fuel continuing political rivalries and keep control of the world through their “balance of terror”.

The Greenham experience epitomized how feminist and ecological politics synthesized the analytical understanding that “the personal is political”, and expanded the ways in which civil society in many countries challenged militarism, from Europe to the Pacific and beyond. For these feminist activists, militarism is the armed wing of patriarchy and both must be dismantled. Grassroots and women’s groups networked around the world, setting up peace camps at military bases and campaigning against a spectrum of nuclear-military threats. From nuclear testing to weapons deployments, activists highlighted not only the environmental and war risks, but also the connected violations of human rights, calling for non-alignment from the NATO and Warsaw military blocs in Europe and for the Pacific to be made nuclear free and independent.

Across the world, feminist challenges increased the participation of women, insisting that leadership needed to be more representative and shared. Lessons, ideas and inspiration were drawn from many places and woven into webs that connected people from many cultures and ethnic heritages across the world in collective endeavours for disarmament, justice

and peace. The Greenham Women's Peace Camp, for example, developed out of a walk from Cardiff to Greenham in August 1981 organized by a group calling themselves "Women for Life on Earth". Their initiative not only echoed the Aldermaston marches of the 1950s and 1960s, but also drew inspiration from the 1980 Women's Pentagon Action in the United States and peace walks that European and Scandinavian groups, including from WILPF, were undertaking to link communities from Western and Eastern European blocs. Evoking the Suffragettes, it was not the walk's leaders but a number of women who had been inspired to participate who played the most significant roles in building and maintaining the Greenham peace camp that inspired women around the world.

Greenham started with one overt request—a televised debate about NATO's "dual track" decision and deployment of the new missiles. This reasonable demand was ignored, and after a year of living and protesting at the USAF base in all weathers, Greenham hit the headlines when 35,000 women surrounded the nine-mile perimeter fence on 12 December 1982, the third anniversary of the NATO decision, in an action called "Embrace the Base". Six thousand stayed through a long, dark, frosty night in order to "Close the Base" on a working Monday with a mass blockade of all the gates. Taking place a month after Greenham women had been imprisoned under a 600-year law after being found guilty of "breaching the peace" with their non-violent protests at the nuclear base,⁶ Embrace the Base was much bigger than anyone expected, and resulted in hundreds of women deciding to live at the peace camp and thousands more setting up Greenham support groups in their home towns and countries, heeding the call to "carry Greenham home".⁷ Many

⁶ When Greenham women, like the Suffragettes before them, refused to be "bound over to keep the peace", replying that non-violent opposition to nuclear weapons was for the purpose of keeping the peace, the inappropriateness of imprisoning women under the 1361 Justices of the Peace Act was not lost on the public. Soon after, charges such as contravening military byelaws or obstructing the highway came to be used more frequently instead.

⁷ Recognizing that most women were not in a position to leave their homes and live full-time at this nuclear base, we encouraged women to "carry

more actions followed, from “dancing on the silos” to Women’s International Day for Disarmament (now institutionalized on 24 May as an annual day of action), and from mass blockades to occupying significant parts of the base (like the air traffic control tower). Die-ins and singing, dancing protests would appear suddenly at political locations such as parliament, Downing Street and the Ministry of Defence.

One early legal initiative involved 13 Greenham women working with the New York-based Center for Constitutional Rights (CCR) and two United States Congress members on a legal case known as “Greenham Women Against Cruise versus Ronald Reagan and the Joint Chiefs of Staff” to seek an injunction to halt deployment of the new missiles in 1983. The central argument was that the humanitarian impacts and first use characteristics of cruise and pershing missiles made these weapons unlawful under United States and international law. However, before the Judge had ruled on jurisdiction, the United States and United Kingdom militaries pre-emptively flew cruise missiles into Greenham in November 1983.⁸ Even so, the case achieved some of its political purpose, inspiring women’s peace camps at North American bases and linking Freeze advocates with European calls for disbanding both sides’ military alliances and achieving a near-term United States–Soviet treaty to ban battlefield and intermediate-range nuclear forces.

As well as thousands of international women passing through the peace camp, Greenham women also travelled abroad to speak at meetings, giving rise to solidarity actions of many different kinds. Meetings were undertaken with atomic bomb survivors (*hibakusha*) from Hiroshima and Nagasaki, and speaking tours were organized with survivors and campaigners

Greenham home” and to show militaries and governments in all our countries that “Greenham women are everywhere”.

⁸ Jane Hickman, “Greenham Women versus Cruise”, and Rebecca Johnson, “Alice Through the Fence” in A. Paliwala, S. Picciotto and M. Ruete (eds.), *Nuclear Weapons, the Peace Movement and the Law*, (Palgrave Macmillan, 1986). See also Alice Cook & Gwyn Kirk, *Greenham Women Everywhere: Dreams, Ideas and Actions, from the Women’s Peace Movement* (London: Pluto Press /Boston: South End Press, 1983).

who were raising awareness of the humanitarian impacts of nuclear colonialism and testing, which led to the founding of Greenham-related groups like “Women Working for a Nuclear Free and Independent Pacific” (WWNFIP). Links and solidarity actions were made with working class communities defending local industries and livelihoods, and with campaigns to end colonialism and apartheid, which supported the nuclear free and independence objectives of the resurgent 1980s’ interconnected, anti-racist and feminist peace movement. Over time, millions of women were empowered to create non-violent actions in their own countries, at bases, deployment sites and places that represented the hopes of democracy or fears of militarism, often with banners that proclaimed “Greenham women are everywhere”. Meanwhile, the experience of living next to a USAF base created a shocking link with women living near military bases across the world, from NATO countries to Kazakhstan, Japan and the Philippines, for a number of Greenham women—especially lesbian feminists—were the targets of sexual and physical attacks from certain military personnel and police. Such experiences caused even closer connections to be made with the core feminist campaigns opposing all forms of gender based violence and abuses of power.

Like most if not all peace movements, Greenham Common Women’s Peace Camp was established as a non-violent campaign, in philosophy as well as tactics. However, it soon became apparent that non-violence, like militarism, is profoundly gendered. The prevailing male dominated versions of “civil disobedience” and “passive resistance” did not resonate with the lived reality of many women. Sublimating fear and anger is an expected behavioural norm for women under patriarchy, so being passive in the face of violence tends to feed into female stereotypes rather than challenging the purveyors of violence. Unlike Gandhi and Martin Luther King, Jr., many women are survivors of domestic and sexual violence. Hence, many of the tenets and techniques of non-violence promoted by male practitioners have served to disempower women activists. To liberate women’s different

forms of creativity and power, Greenham developed different strands of philosophy and psychology to empower a strong, feminist praxis of non-violence that did not suppress anger and fear but channelled them into a powerful challenge to State and individual violence. This drew energy by legitimizing emotions, intuitions and rational analysis, so that strategies for changing the patriarchal status quo would be fuelled by the passionate commitment to life, justice and the natural world (including scientific understanding). Greenham's contribution was to demonstrate that non-violence is not merely the refusal to use violence, but an active, empowering and transformative praxis for challenging, delegitimizing and neutralizing all forms of personal and political violence.⁹

The first step political demand for a treaty to ban the destabilizing "Euromissiles" was achieved when Presidents Reagan and Gorbachev signed the INF Treaty on 8 December 1987. By 1992 the missiles had been removed and dismantled, though the nuclear warheads were mostly recycled. By 1993 the USAF base was completely closed, and by 2000, most of Greenham had been restored as Common Land, with the nuclear silos standing empty in one corner in case Soviet inspectors should still want to check, as was their verification right under the INF Treaty. Having virulently opposed these developments, the conservative government tried to reframe these successes as the outcome of NATO's "negotiations from strength". Some Reagan-era memoirs have paid tribute to civil society's impact on United States decision-making, however, and Gorbachev has cited Greenham women and the nuclear winter studies by United States and Russian doctors and scientists as important factors in his decision to initiate disarmament talks through the Reykjavik Summit in October 1986.¹⁰

The Greenham peace camp largely dispersed after the missiles were removed under the INF Treaty. A few stayed

⁹ See *Feminism and Nonviolence Study Group, Piecing in Together: Feminism & Nonviolence*, 1983; and Amanda Sebestyen (ed.), '68, '78, '88: *From Women's Liberation to Feminism*, (Prism Press, 1988).

¹⁰ Fairhall, op. cit. *The Story of Greenham Common Ground*, IB Tauris, 2006.

locally until Greenham was reinstated as Common Land, but most others went back to former lives or moved on to other campaigns—still with high priorities given to social justice, disarmament, law and peace. I chose to use my humanitarian, feminist and environmental analyses and experiences from my five years at Greenham to redouble efforts to ban nuclear testing, networking with established arms control and nonproliferation NGOs as well as grass-roots anti-testing activists in NATO countries and the Pacific. When the CTBT was finally concluded in 1996, it was due not only to the political and diplomatic decisions of the negotiating governments, but the spectrum of grass-roots activism and NGO strategies and advocacy that helped to create the conditions for negotiations, including bringing several of the nuclear-armed States to the table, and promoting key objectives such as the zero yield scope.¹¹

Humanitarian disarmament approaches crystallized in the period 1993 to 2008, during which the principles of International Humanitarian Law (IHL) were harnessed by coalitions of governments and civil society activists to achieve two important treaties that stigmatized, banned and are well on their way to eliminating anti-personnel landmines and cluster munitions respectively.¹² By the time of the 2010 NPT Review Conference, a small group of diplomats and civil society representatives were embarking on a humanitarian strategy to prohibit nuclear weapons. Recognizing that arms control had continued to provide a cover for modernization, this group transformed a small Australian project of IPPNW that had a

¹¹ See Rebecca Johnson, *Unfinished Business: The negotiation of the CTBT and the end of nuclear testing* (UNIDIR 2009); and Rebecca Johnson, “Advocates and Activists: Conflicting Approaches on Nonproliferation and the Test Ban Treaty” in Ann Florini (ed.), *The Third Force: The Rise of Transnational Civil Society*, (2000).

¹² See M. A. Cameron, R. J. Lawson and B. W. Tomlin (eds.), *To Walk Without Fear: The Global Movement to Ban Landmines* (1998); Richard Price, “Reversing the Gun Sights: Transnational Civil Society Targets Landmines”, *International Organization* 53:3 (1998) pp. 613-644; Ethan A Nadelmann, “Global prohibition regimes: the evolution of norms in international society”, *International Organization* 44:4 (Autumn 1990), pp. 479-526; and John Borrie, *Unacceptable Harm: A History of How the Treaty to Ban Cluster Munitions Was Won*, (2009).

great name—the International Campaign to Abolish Nuclear Weapons (ICAN)—into the driving coalition of civil society actors advocating for a nuclear weapons ban treaty. ICAN now has its main office in Geneva and coordinates over 440 NGOs in 99 countries (at time of writing). In an interesting historical footnote, the ICAN logo¹³ is a missile broken across the CND peace symbol.¹⁴ With an International Steering Group drawn from disarmament and humanitarian NGOs from Australia to Japan, Latin America and Africa, and from NATO members Norway, United Kingdom, Canada, Netherlands and the United States, ICAN has mobilized civil society across the world to ensure that their Governments participate in the process to stigmatize, ban and eliminate nuclear weapons.¹⁵ At a time when most non-nuclear governments have plenty of worries other than nuclear weapons on their agenda, the awareness and political pressure that ICAN has created around nuclear risks, dangers and consequences—as well as the patient work of local campaigners to get their governments to turn up and vote—have made all the difference. As partners to the core group of governments driving this new kind of humanitarian nuclear disarmament process forward, ICAN has played key roles in mobilizing for the Oslo, Nayarit and Vienna Conferences on the Humanitarian Impacts of Nuclear Weapons (HINW), and to maximize votes for various resolutions and humanitarian initiatives at United Nations, NPT and various parliamentary meetings from 2012 onwards.

Like Greenham, the effectiveness of ICAN has depended on the decision to reframe disarmament as a humanitarian and environmental issue. Instead of becoming trapped in

¹³ See <http://www.icanw.org/>.

¹⁴ An original design by Peter Kennard that had been made for anti-Trident demos in the 1990s and was revived, with permission, as the ICAN logo.

¹⁵ This quote is from Federal President of Austria, Heinz Fischer in his speech to the High Level Meeting of the United Nations General Assembly on Nuclear Disarmament, New York, 26 September 2013 “Nuclear weapons should be stigmatized, banned and eliminated before they abolish us.” Austria has been a leading Government in nuclear prohibition strategies since 2010, and held the Vienna Conference in December 2014, which initiated the international Humanitarian Pledge.

State-centred, military-stability arguments such as deterrence, these campaigns have demonstrated how treaty objectives and disarmament strategies can be achieved by grounding advocacy in humanitarian concerns and civil society action. Both these historic approaches recognized and challenged the role of power, status and gender in normalizing and perpetuating weapons and war.¹⁶ By changing the assumptions and value attached to nuclear weapons and deterrence, and by creating international networks and alliances of civil society and middle powers, it is possible to accomplish what the mainstream arms control realists consider to be impossible—a treaty to prohibit nuclear weapons that will change the calculus for the nuclear-dependent States and their established political-military interests. History teaches, as Greenham women demonstrated, that when there is a deeply entrenched establishment, as with nuclear weapons, change is likely to come more swiftly through collective demands and networked activism than with well behaved, status-reinforcing steps that play into the hands of dominant power brokers.

¹⁶ OpenDemocracy has published a series of contemporaneous articles from me on the humanitarian disarmament initiatives to ban nuclear weapons since 2010, including through a gendered lens that takes a historical perspective in critiques of non-proliferation, arms control and nuclear weapons modernization. For links to the range of articles, see <https://www.opendemocracy.net/author/rebecca-johnson>.

Delegitimising nuclear violence¹

Nick Ritchie, PhD

Nuclear violence

Reducing and eventually eliminating the risk of nuclear violence remains a challenging task. Currently, countries that possess nuclear weapons and those to whom the United States has extended its nuclear protection in the form of security commitments see considerable value in the long-term retention and deployment of nuclear weapons. The value of nuclear weapons is framed primarily in terms of security through the practice of nuclear deterrence.² Deterrence rests on the possibility of catastrophic harm through nuclear violence and inducement of a sufficient level of caution into State interactions through fear of such a possibility as to preclude serious war and thereby stabilise relations between the major powers.

Nuclear weapons undoubtedly have the potential to induce caution and thereby change the behaviour of political actors. However, historical and psychological research shows that the political effect of deterrence is not an automatic outcome of the deployment of nuclear weapons or something intrinsic to the weapons themselves.³ Numerous studies have shown that there are fundamental uncertainties associated with the theory

¹ This chapter summarises a paper on “Pathways to nuclear disarmament: delegitimising nuclear violence” presented to the United Nations Open-ended Working Group on “Taking forward multilateral nuclear disarmament negotiations”, Palais des Nations, 11 May 2016.

² Other values are often assigned to nuclear weapons in terms of domestic politics and collective ideas of national identity. I explore this in “Valuing and Devaluing Nuclear Weapons”, *Contemporary Security Policy*, 34: 1, 2013, pp. 146-173.

³ See Jervis, R., *Perception and Misperception in International Politics* (Princeton: Princeton University Press, 1976); George, A. and Smoke, R., *Deterrence in American Foreign Policy* (New York:

and practice of nuclear deterrence.⁴ Research has shown that nuclear weapons do not induce a common and rational logic of escalation and control between nuclear-armed adversaries in a crisis.⁵ Deterrent threats rather destabilise by incentivising risk taking, galvanising resistance and intensifying crises.⁶

Proponents of nuclear deterrence might readily accept this uncertainty by arguing that the risk of things going wrong is very small. Yet the fallibility of nuclear deterrence is of paramount concern because even if the probability of something going wrong is small—either with nuclear weapons technology, organisational procedures or the practice of nuclear deterrence in a crisis—the effects of the deliberate or accidental detonation of even a single modern nuclear weapon promises to be catastrophic. Recent United Nations research shows that the human, environmental and economic effects of multiple nuclear detonations would be unmanageable.⁷ Environmental modelling shows that even a relatively modest nuclear exchange would have a disastrous impact on the global climate caused by the tremendous amount of smoke released into the atmosphere.⁸

Columbia University Press, 1974), and McGwire, M., “Deterrence: The problem not the solution”, *International Affairs*, 62: 1, 1986, pp. 55-70.

⁴ Adler, E., “Complex Deterrence in the Asymmetric-Warfare Era”, in T. V. Paul, M. Morgan and J. Wirtz (eds.) *Complex Deterrence: Strategy in the Global Age* (University of Chicago Press: Chicago, 2009), pp. 88-90.

⁵ See Bowen, W., “Deterrence and Asymmetry: Non-State Actors and Mass Casualty Terrorism” in I. Kenyon and I. Simpson (eds.) *Deterrence and the New Global Security Environment* (London: Routledge, 2006), pp. 50-51; Booth, K., *Strategy and Ethnocentrism* (London, Croom Helm, 1979). Jervis, R., “The Confrontation between Iraq and the US: Implications for the Theory and Practice of Deterrence”, *European Journal of International Relations* 9: 2, 2003, pp. 322-23; George, A. and Smoke, R., *Deterrence in American Foreign Policy* (New York: Columbia University Press, 1974) Chapter 17.

⁶ Burke, A., “Nuclear reason: at the limits of strategy”, *International Relations*, 23: 4, 2009, pp. 506-29.

⁷ Borrie, J. and Caughley, T., *An Illusion of Safety: Challenges of Nuclear Weapon Detonations for United Nations Humanitarian Coordination and Response* (Geneva: UNIDIR, 2014).

⁸ For example, Toon, O., Robock, A. and Turco, R., “Environmental Consequences of Nuclear War”, *Physics Today*, December 2008, pp. 37-42; Mills, M., Toon, O., Turco, R., Kinnison, D., and Garcia, R.,

Supporters of nuclear weapons counter that the precise reason for deploying them is so that they will never be used. They are “political” as opposed to “war-fighting” weapons whose purpose is solely to deter (or the far more specious argument that they are “used” everyday simply by existing). That might be the intent but the logic of nuclear deterrence rests on detailed, permanent and active plans, operational capabilities, organisational infrastructure and political will to deliver and detonate nuclear warheads on other societies. The risk of nuclear deterrence not working is a necessary feature of the system. The very logic of nuclear deterrence rests on the possibility of deliberate or uncontrolled escalation to nuclear violence. The cold war experience demonstrated that nuclear deterrence in practice is a game of nuclear brinkmanship and provocative threat making based on “threats that leave something to chance” as Thomas Schelling put it—the chance being massive and indiscriminate nuclear violence.⁹ The continuing risk of nuclear violence has generated deep concern about the creeping permanence of nuclear weapons, frustration at the slow pace of nuclear disarmament, and cynicism about the nuclear-armed States’ commitment to nuclear disarmament under the Non-Proliferation Treaty (NPT).¹⁰

A new initiative

At the 2010 NPT Review Conference a group of States responded with a new initiative to refocus disarmament diplomacy on the unacceptable humanitarian impact of nuclear

“Massive Global Ozone Loss Predicted Following Regional Nuclear Conflict”, Proceedings of the National Academy of Sciences, 105: 14, 2008, pp. 5307-12. For an overview and further references see Starr, S., “Catastrophic Climatic Consequences of Nuclear Conflict”, research paper commissioned by the Independent Commission on Nuclear Non-Proliferation and Disarmament, October 2009.

⁹ Schelling, T., *The Strategy of Conflict* (Cambridge, Mass: Harvard University Press, 1960), p. 187.

¹⁰ Explored further in Nick Ritchie, “Waiting for Kant: Devaluing and Delegitimising Nuclear Weapons”, *International Affairs*, 9: 3, 2014, pp. 601-623

violence building on the idea of “humanitarian disarmament”.¹¹ They argued that the singularly destructive power, the transboundary health, environmental and intergenerational effects, and the scale of human suffering caused by the use of nuclear weapons would breach international humanitarian law in practically all conceivable circumstances.

This gathered widespread political and popular support in the form of a so-called “humanitarian initiative” of States, international organisations and civil society actors. It led to three intergovernmental conferences on the humanitarian impact of nuclear weapons in 2013 in Oslo, in February 2014 in Mexico, and in December 2014 in Austria at the Hofburg Palace in Vienna attended by 158 States.¹² At the end of the conference Austrian Deputy Foreign Minister, Michael Linart, presented a “pledge” in which he committed Austria to “cooperate with all relevant stakeholders, States, International Organisations, the International Red Cross and Red Crescent Movements, parliamentarians and civil society, in efforts to stigmatise, prohibit and eliminate nuclear weapons in light of their unacceptable humanitarian consequences and associated risks.” This Humanitarian Pledge was adopted by the United Nations General Assembly in December 2015.¹³ It has now been formally endorsed by 127 governments.

Diplomatic pressure in 2015 took the issue into the United Nations system. At the United Nations General Assembly that October, a core group of States tabled a resolution on “Taking forward multilateral nuclear disarmament negotiations” through a United Nations working group open to participation

¹¹ Lewis, P., “A New Approach to Nuclear Disarmament: Learning from International Humanitarian Law Success,” International Commission on Nuclear Non-Proliferation and Disarmament, Paper No. 13, January 2009.

¹² For an overview see Nick Ritchie, “The Story So Far: The Humanitarian Impact of Nuclear Weapons Initiative”, ILPI-UNIDIR Vienna Conference Series, Paper No. 1, December 2014. Available at <http://www.unidir.org/files/publications/pdfs/the-story-so-far-en-616.pdf>.

¹³ United Nations General Assembly, “Humanitarian Pledge for the Prohibition and Elimination of Nuclear Weapons”, A/RES/70/48, 7 December 2015.

by all United Nations Member States. This Open-ended Working Group met three times in 2016 and its final report recommended, among other things, negotiation of a legally binding instrument prohibiting nuclear weapons.¹⁴ In October 2016, 34 countries submitted a resolution to the First Committee of the United Nations General Assembly on “Taking forward multilateral nuclear disarmament negotiations” to “convene in 2017 a United Nations conference to negotiate a legally binding instrument to prohibit nuclear weapons, leading towards their total elimination”.¹⁵ It was passed by 123 votes to 38 with 16 abstentions.

Devaluing nuclear weapons

The purpose of the humanitarian initiative for a number of civil society campaign organisations, such as the International Campaign to Abolish Nuclear Weapons (ICAN), is to develop a new legal instrument to explicitly stigmatise and prohibit any use of nuclear weapons and their possession following the path of biological and chemical weapons. This stands in contrast to diplomatic efforts that focus on reducing the value and the role of nuclear weapons through the actions of those that deploy them. It is useful at this point to distinguish between reducing the value of nuclear weapons and reducing the legitimacy of nuclear violence.

The post-cold war nuclear disarmament process has generally focused on efforts to reduce the value assigned to nuclear weapons by nuclear-armed States.

The security values assigned to nuclear weapons have diminished since the end of the cold war as the international social, economic and political landscape has changed, but this has been a limited process of what we might call “surface devaluing”. This refers to a number of changes that have

¹⁴ United Nations General Assembly, “Report of the Open-ended Working Group taking forward multilateral nuclear disarmament negotiations”, A/71/317, 1 September 2016.

¹⁵ General Assembly resolution 71/258 of 23 December 2016, “General and complete disarmament: taking forward multilateral nuclear disarmament negotiations”.

occurred in the nuclear policies of nuclear-armed States, particularly the United States and Russia. They include: a general move away from nuclear defence and towards expeditionary conventional warfare; reducing the vast excesses of cold war legacy nuclear forces; marginalising the idea of using nuclear weapons for battlefield “war-fighting” (with exceptions in Russia and Pakistan); shifting some roles previously assigned to nuclear weapons to conventional weapons (mainly in the United States); and consolidating formal declaratory policies about who might qualify for a nuclear attack and under what conditions.¹⁶

All of this is welcome, but it represents only limited or partial devaluing. “Deeper” forms of devaluing that require more explicit changes to nuclear doctrines that would restrict the practice of nuclear deterrence have been largely rejected. These include familiar measures such as a no-first use agreement, de-alerting deployed nuclear-weapon systems, and legally binding negative security assurances. Nevertheless, the NPT nuclear-weapon States say this surface devaluing is excellent progress and fulfils requirements for meeting their nuclear disarmament responsibilities over the past five NPT review cycles from 1990 to 2015.¹⁷

Focusing disarmament diplomacy on efforts to reduce the security value assigned to nuclear weapons by nuclear-armed States in terms of warhead numbers, types and doctrine does a number of things:

While it might accept that the risk of nuclear violence must be taken seriously, it suggests that the problem is not the weapons themselves or the practice of nuclear deterrence, but who has them, in what numbers, and how they are configured.

It says the risk of nuclear violence can be safely managed for the foreseeable future through adjustments to nuclear posture, doctrine, consolidation of nuclear forces and vigorous counter-proliferation.

¹⁶ See Ritchie, “Waiting for Kant”.

¹⁷ For example, Statement by the P5, NPT Preparatory Committee, General Debate, Vienna, 3 May 2012.

It devolves agency for nuclear disarmament to the nuclear-armed States and their agendas and relationships.

It leaves the logic and practice of nuclear deterrence undisturbed and leaves the legitimacy of nuclear weapons intact as far as the nuclear-armed States and their allies are concerned.

This is evidenced in statements that accompany nuclear-weapon reductions that restate an unequivocal commitment to nuclear deterrence and the necessity of nuclear weapons for national security.

Delegitimising nuclear weapons

The humanitarian initiative shifted the focus from devaluing nuclear weapons to delegitimising and stigmatising nuclear violence. In doing so, it has challenged the very legitimacy of valuing nuclear weapons at all—irrespective of whether a particular government values its weapons, its particular doctrine, or its operational posture in one way or another.

The humanitarian initiative argues that nuclear weapons are illegitimate because of the appalling humanitarian, health and environmental consequences of any use under any circumstances. The risk of nuclear violence posed by the continued existence, spread and modernisation of nuclear weapons has been framed as unacceptable and the purported security benefits of nuclear deterrence rejected.¹⁸ The initiative's coalition of States is no longer prepared to accept the slow and open-ended "step-by-step" nuclear disarmament agenda endorsed by the nuclear-armed States and their formal allies. Their reaction borne out of frustration with the pace of disarmament is challenging the legitimacy of nuclear weapons based on the humanitarian consequences of their use.

This unacceptability is rooted in a collective moral revulsion and rejection of specific categories of violence, especially massive, inhumane and indiscriminate forms of

¹⁸ On reframing see Borrie, J. "Humanitarian reframing of nuclear weapons and the logic of a ban", *International Affairs*, 90: 3, 2014, pp. 625-46.

violence. This has been progressively codified in legal rules and normative principles governing the conduct of war, in particular international humanitarian law applicable in armed conflict, but also international human rights law and international environmental law. The legitimacy and authority of these norms and rules rests on their universality. According to these norms and rules, nuclear weapons are the very worst of all.

The initiative has been underpinned by a deliberate strategy to move thinking about the moral acceptability of nuclear weapons and the practice of nuclear deterrence towards the deontological end of the ethical spectrum. A deontological position denies nuclear weapons and nuclear deterrence moral value because of the unacceptable effects of use and, by extension, intention to use irrespective of context. Nuclear weapons per se are considered illegitimate instruments of statecraft because any use is deemed morally wrongful and because the risk of nuclear violence cannot be eliminated as long as nuclear weapons exist.¹⁹ This contrasts with a consequentialist position that claims moral value for nuclear weapons through the practice of deterrence. This generates a greater good of war prevention and international stability that renders the possibility of nuclear use “morally tolerable” insofar as the ends of war prevention justify the means of nuclear deterrence.²⁰

Delegitimising nuclear weapons through prohibition

The legitimacy of a particular practice such as possessing or using nuclear weapons tends to rest on four broad factors: 1) legal validity; 2) the justifiability of prevailing rules that permit that practice; 3) popular consent; and 4) equality or non-discrimination. Delegitimising nuclear weapons, therefore, suggests a set of processes that: 1) undermine claims to legal validity; 2) demonstrate withdrawal of consent for practices that legitimise nuclear weapons; 3) highlight and address the

¹⁹ Hayashi, N. “On the Ethics of Nuclear Weapons”, ILPI-UNIDIR NPT Review Conference Series paper No. 2, 2015.

²⁰ See Quinlan, M. *Thinking About Nuclear Weapons*, chapter 5 “The Ethics of Nuclear Weapons” (Oxford: Oxford University Press, 2009).

discriminatory character of the nuclear weapons control regime under the NPT; and 4) challenge the justifiability of the rules that serve as a source of legitimacy for nuclear weapons.²¹

An obvious way of maximising the delegitimation of nuclear weapons is through a comprehensive, non-discriminatory and unequivocal legal prohibition—one based on an alternative set of justifiable rules rooted in universal international humanitarian law rather than rules that permit the selective possession of nuclear weapons. This would undermine existing claims for the legal validity of possessing and using nuclear weapons. It would address the inequality of the NPT that discriminates between nuclear and non-nuclear-weapon States. It would represent a withdrawal of consent by signatory governments for current practices that tacitly legitimise nuclear weapons, though only if a prohibition gathered significant support.

A key difference between a focus on delegitimising nuclear violence and a focus on measures by nuclear-armed states to reduce the value assigned to their nuclear weapons, is that the problem is explicitly the weapon, not specific practices or specific actors. The threat to peace and security is not nuclear proliferation (which is a term that confines danger to the acquisition of nuclear weapons by additional states), the threat is the existence of the weapons themselves irrespective of the possessor. Nuclear weapons in this framing are a collective international liability rather than an individual national asset. The underlying argument is that a stable and secure global society does not need nuclear scaffolding and that nuclear weapons constitute a continuing threat to global society rather than an inescapable structural necessity.

²¹ I explore this further in “Legitimising and Delegitimising Nuclear Weapons”, in Borrie, J. and Caughley, T. *Viewing Nuclear Weapons Through a Humanitarian Lens* (Geneva: UNIDIR, 2014). It draws on Beetham, D. *The Legitimation of Power* (Basingstoke, Macmillan, 1991) and Rathbun, N. “The Role of Legitimacy in Strengthening the Nuclear Non-Proliferation Regime”, *The Nonproliferation Review*, 13: 2, 2006, pp. 227-252.

Emphasising the illegitimacy of nuclear weapons shifts the direction of disarmament diplomacy away from an exclusive focus on trying to change the policies of the nuclear-armed states. It moves it towards changing the normative international environment in which nuclear weapons and nuclear-armed states are embedded. It shifts the centre of power in disarmament diplomacy away from the agency of those that have nuclear weapons, their relationships with each other, and their nuclear weapons programmes. Instead, it empowers a much broader community of States to change the international social structure of nuclear legitimacy and illegitimacy, and the relationship between nuclear-armed and non-nuclear-armed States.

Delegitimising nuclear weapons is therefore about challenging the international social acceptability of valuing the nuclear weapon. It is a process of widening and deepening a collective normative censure of nuclear violence. It is about codifying that censure in a legal form to maximise its authority and normative effect. This might be limited or it could be significant. A “non-paper” circulated by the United States to its NATO allies on 17 October 2016 on “Defence impacts of potential United Nations General Assembly nuclear weapons ban treaty” suggests such a prohibition treaty could have a significant impact on NATO nuclear operations.²² It is about diminishing nuclear weapons as a currency of power in the international system. It is about extending the informal stigmatisation of the use of nuclear weapons captured in the idea of a “nuclear taboo” to the existence of nuclear weapons.²³

²² Cheshier, C. United States Mission to NATO, Non-Paper to the Committee on Proliferation, “Defence impacts of potential United Nations General Assembly nuclear weapons ban treaty”, 17 October 2016.

²³ Tannenwald, N. “The Nuclear Taboo: The United States and the Normative Basis of Nuclear Non-Use”, *International Organization*, 53: 3, 1999, p. 463. As Tannenwald explains it, underpinning the taboo “is the belief that nuclear weapons, because of their immense destructive power, flagrantly violate long-standing moral principles of discrimination and proportionality in the use of force. These principles, in turn, have at their core the moral intuition that it is wrong to kill noncombatants, or more generally, the innocent, and to cause excessive destruction.” Tannenwald, N, “Stigmatizing the Bomb: Origins of the Nuclear Taboo”, *International Security*, 29: 4, 2005, p. 11.

A nuclear prohibition treaty has the potential to perform that role. It would by definition constitute an unequivocal delegitimation through a legal instrument that categorically prohibits the possession and use of nuclear weapons based on universal principles of unacceptable harm. This, in turn, could precipitate a deeper, sharper, stigmatisation of nuclear weapons and thereby generate possibilities for change. The purpose here is to challenge and destabilise the acceptability of nuclear violence, to create what Reus-Smit calls “a crisis of legitimacy” for nuclear weapons, and possibilities for change in the nuclear policies and practices of the nuclear-armed and their allies, change that otherwise does not seem forthcoming.²⁴

This might be achieved in a number of ways. Institutionalising a prohibitory norm in treaty law would further enhance the legitimacy of the claim that nuclear weapons are morally unacceptable and in doing so strengthen the norm’s authority.²⁵ Institutionalised prohibitions can, as Harald Muller argues, compel non-adherents to justify their actions through the lens of the new regime by virtue of the regime’s existence.²⁶ New regimes can give new meanings to specific actions (such as nuclear sharing in NATO) whether a non-adherent wants it to or not. Once established, a new regime cannot easily be ignored. Treaty instruments also create legal, diplomatic and political constituencies committed to embedding, expanding and reproducing the regime’s prohibitions and obligations. These constituencies continue the “strategic social construction” of the norm’s entrepreneurs to actively construct linkages between existing norms and the emergent norm and to assign positive and negative meanings to actions and circumstances that

²⁴ Reus-Smit, C. “International Crises of Legitimacy”, *International Politics*, 44: 1, 2007, p. 157.

²⁵ Chayes, A. and Shelton, D. “Commentary” In Shelton, D. (ed.) *Commitment and Compliance: The Role of Non-Binding Norms in the International Legal System* (Oxford: Oxford University Press, 2003), p. 527.

²⁶ Muller, H. “The Internationalization of Principles, Norms, and Rules by Governments: The Case of Security Regimes” in Rittberger, V. (ed.) *Regime Theory and International Relations* (Oxford: Clarendon Press, 1983), p. 383.

reinforce or transgress that norm.²⁷ Nina Tannenwald argues that processes of stigmatising the use of nuclear weapons take four forms: bottom-up societal pressure for normative change; normative power politics whereby States publicly delegitimise weapons deemed advantageous to adversaries; decisions of individual decision makers whose actions delegitimise use; and iterative behaviour over time that can become customary and eventually constitute non-deliberative norm adherence.²⁸

When society collectively labels a practice such as the possession and use of nuclear weapons (or piracy, or slavery) as illegitimate, it moves it beyond the realm of “normal” and acceptable behaviour within that society. When illegitimacy is rooted in moral revulsion then that practice can become stigmatised.²⁹ This is a process of separation, one that discriminates between those actors that engage in unacceptable behaviour and those that do not. Nonconformity is punished by shaming, moral opprobrium, sanction and exclusion insofar as this is possible.³⁰ A stigma of this sort constitutes a prohibitory norm. Such a norm cannot prevent a prohibited act if the means remain available, but it can mobilise sustained opposition and restrain behaviour. But a stigma does more than that: it can also shape actors’ identities in terms of whether an actor understands itself as the sort that accepts or conforms to prohibitory norms or one that does not. This can result in changes in behaviour for actors that identify as norm adherents.³¹ As Rappert notes, “in the case of chemical and biological warfare capabilities in the build-up to WWII, the stigma against certain categories can affect whether they are judged as compatible with ‘military culture.’ A perceived lack

²⁷ Finnemore, M. and Sikkink, K. “International Norm Dynamics and Political Change”, *International Organization*, 52: 4, 1998, p. 888.

²⁸ Tannenwald, “Stigmatizing the bomb”, p. 13.

²⁹ Nadelman, E., “Global Prohibition Regimes: The Evolution of Norms in International Society”, *International Organization*, 44: 4, 1990, p. 480.

³⁰ Adler-Nissen, R. “Stigma Management in International Relations: Transgressive Identities, Norms, and Order in International Society”, *International Organization*, 68: 1, 2014, pp. 147-176.

³¹ Price, R. “A Genealogy of the Chemical Weapons Taboo”, *International Organization*, 49: 1, 1995, p. 87.

of such a fit can affect what resources militaries dedicate to these options and, in turn, their ultimate utility. In such ways, norms and interests are not mutually exclusive.”³²

Prohibition vs. regulation?

We can therefore differentiate two broad approaches to nuclear disarmament diplomacy: first, a disarmament process guided by the subjective assessments of the nuclear-armed States about the relative value of their nuclear weapons in different and evolving security contexts; second, a process that delegitimises nuclear weapons by undermining the legitimacy of valuing them irrespective of their perceived utility by those that possess them (or indeed are possessed by them).

Advocates of a “step-by-step” and “building blocks” approach to nuclear disarmament tend to privilege the first approach.³³ In doing so, they have suggested that a new legal instrument to prohibit nuclear weapons is either an unnecessary distraction from other important measures such as a Fissile Material (Cut-off) Treaty, a diplomatic insurgency that will imperil the NPT, or a deliberately divisive, exclusive and therefore invalid diplomatic process. These two approaches might suggest different priorities for disarmament diplomacy, but nothing about a prohibition is intrinsically incompatible with a step-by-step or building blocks approach, nor is it exclusionary or in tension with the NPT as whole. A prohibition and other important measures such as entry into force of the CTBT, negotiation of an FM(C)T, nuclear stockpile reductions, disarmament verification research, and other “building blocks” are not mutually exclusive. Political work is required on both physical constraints (on stockpiles, testing, fissile material production, and deployments) and normative and legal constraints (on declaratory policy, use and possession).

³² Rappert, B. “A Convention Beyond the Convention: Stigma, Humanitarian Standards and the Oslo Process”, *Landmine Action*, London, 2008, p. 18.

³³ For an overview of these approaches see Borrie, J., Caughley, T., Hugo Graff, T. Lovøld, Nystuen, G., and Waszink, C. *A Prohibition on Nuclear Weapons: A Guide to the Issues* (Geneva: UNIDIR and ILPI, February 2016);

Focusing on delegitimising nuclear weapons does not diminish the importance of efforts to reduce nuclear stockpiles and change nuclear doctrines, but neither does it restrict “effective measures” on nuclear disarmament to the agency of those that have nuclear weapons. Delegitimising nuclear weapons would likely change the context of future “steps” and “building blocks”—indeed that would be the point—but it is not logically incompatible with them. Indeed, United Nations General Assembly resolution 71/258 acknowledged that while “a legally binding instrument prohibiting nuclear weapons would be an important contribution towards comprehensive nuclear disarmament ... additional measures, both practical and legally binding, for the irreversible, verifiable and transparent destruction of nuclear weapons would be needed in order to achieve and maintain a world without nuclear weapons”.³⁴ A prohibition would challenge nuclear-weapon-State discourses and practices that use the NPT to legitimise nuclear weapons but it would not challenge the NPT itself. It would, in effect, recognise the inability of the NPT to categorically delegitimise all nuclear weapons and provide an appropriate solution that would constitute an “effective measure” on nuclear disarmament under the treaty’s Article VI, which contains the disarmament obligation.

Arguments about the mutual exclusivity of a prohibition on the one hand and a step-by-step or building blocks approach on the other mask a deeper opposition to the delegitimation of nuclear weapons and the practice of nuclear deterrence that is still accepted as legitimate. It is resistance to a process of delegitimation that appears to have led nuclear-weapon States to largely exclude themselves from the Humanitarian Impact of Nuclear Weapons conferences and the 2013 and 2016 Open-ended Working Groups. As Tannenwald observed in 2005, “The absence of a formal legal prohibition on nuclear weapons stems primarily from the fact that the great powers do

³⁴ General Assembly resolution 71/258 of 23 December 2016, “General and complete disarmament: taking forward multilateral nuclear disarmament negotiations”, p. 3.

not want it”.³⁵ Indeed, the United States “non-paper” to NATO on a ban treaty stated “efforts to negotiate an immediate ban on nuclear weapons or to delegitimize nuclear deterrence are fundamentally at odds with NATO’s basic policies on deterrence and our shared security interests.”³⁶

Conclusion

The humanitarian initiative was born out of exasperation with the slow pace of nuclear disarmament, the continuing dangers of a nuclear-armed world, and a seemingly implacable commitment to the logic of nuclear deterrence by the nuclear-armed. Its core theme of delegitimising and stigmatising nuclear weapons has coalesced around the idea of a nuclear prohibition. Political momentum has now led to a United Nations mandate to negotiate a nuclear weapons ban treaty in 2017 under United Nations General Assembly rules of procedure. The process could extend into 2018 when the General Assembly has committed to convene a “high-level international conference on nuclear disarmament to review the progress made” on “urgent and effective measures to achieve the total elimination of nuclear weapons” following a high-level disarmament meeting on 26 September 2013.³⁷

A prohibition is unlikely to effect immediate change in the nuclear policies and practices of the nuclear-armed, but it will contribute to the delegitimation of nuclear violence and stigmatisation of nuclear weapons. Processes of delegitimation can take time and can evolve in complex ways as the identities, practices, and policies of delegitimation are negotiated through interaction with competing identities, practices and legal doctrines, such as the right to self-defence. The emergence of a so-called “nuclear taboo” stigmatising the use of nuclear weapons, the 1996 Advisory Opinion of the International Court

³⁵ Tannenwald, “Stigmatizing the bomb”, p. 47.

³⁶ Cheshier, C “Defence impacts of potential United Nations General Assembly nuclear weapons ban treaty”.

³⁷ United Nations General Assembly resolution A/68/32, “Follow-up to the 2013 high-level meeting of the General Assembly on nuclear disarmament”, 5 December 2013.

of Justice on the legality of the threat or use of nuclear weapons, the delegitimation of explosive nuclear testing through a series of treaties and protests culminating in the CTBT, and the delegitimation of the acquisition of nuclear weapons through the NPT and nuclear-weapon-free zones are key registers in a long-term project of rendering the possession of nuclear weapons unacceptable by all States, but in particular and necessarily those that currently possess them. This will require significant support from non-nuclear-weapon States and civil society organisations and a sustained collective determination to exert normative pressure on nuclear-armed States and their treaty allies drawing on the authority of a formal treaty.

Revolt and resistance

Ray Acheson, MA

On 27 October 2016, the United Nations made a dramatic stand against the violent posturing of its most militarily powerful members when 123 states in the First Committee of the General Assembly voted to ban nuclear weapons. The adoption of a draft resolution known as L.41,¹ which establishes a conference in 2017 to negotiate a legally binding treaty prohibiting nuclear weapons, represents a meaningful advancement towards their elimination. It also represents a revolt of the vast majority of States against the violence, intimidation and injustice perpetuated by those supporting these weapons of mass destruction.

Revolt, wrote philosopher Albert Camus in *The Myth of Sisyphus*, is “one of the only coherent philosophical positions ... It challenges the world anew every second.” Camus explored the theme of revolt across many books and novels, finding that struggle not only “gives value to life” but also that it is an obligation, even in the face of adversity, power, and overwhelming odds.

Not surprisingly, most states possessing nuclear weapons or including them in their security doctrines have tried to suppress this revolt. In the weeks leading up to the vote on L.41, several of the nuclear-armed States actively lobbied their allies to vote against the resolution.² Even on the day of the vote, Russia’s representative warned of the “fatal, destructive repercussions”

¹ This draft resolution was adopted by the General Assembly as resolution 71/258 on 23 December 2016.

² “US pressured NATO states to vote no to a ban,” International Campaign to Abolish Nuclear Weapons, 1 November 2016, <http://www.icanw.org/campaign-news/us-pressures-nato-states-to-vote-no-to-the-ban-treaty>; Colum Lynch, “U.S. Seeks to Scupper Proposed Ban on Nuclear Arms,”

of adopting the resolution, describing the initiative to prohibit nuclear weapons as “hasty” and at risk of “plunging the world into chaos and dangerous unpredictability.”³

We have heard such remarks from most of the nuclear-armed states for the last two years. At the core of this rhetoric is a belief that certain states have the right to possess nuclear weapons. The Russian and UK delegations have outright declared that the Non-Proliferation Treaty (NPT) confers legitimacy on their possession of nuclear weapons. This disingenuous interpretation of the so-called cornerstone of the nuclear-weapon governance regime has meant that for nearly half a century, five countries have failed to comply in good faith with their legal obligation to disarm. It has meant that four other countries have tried to assert their own claim to power through violence by acquiring nuclear weapons and shunning the NPT. It has meant a proliferation of programmes and mechanisms to prevent others from acquiring nuclear weapons whilst billions of dollars have gone to upgrading and extending the lives of the ones already existing.⁴

It has also meant that some of their allies support the retention of nuclear weapons, asserting that their ability to threaten the rest of the world with massive nuclear violence provides them with security. These governments have likewise warned that banning nuclear weapons will destroy the nuclear non-proliferation regime or that it will increase regional and international tensions. Underpinning this line of arguments is the assertion that a nuclear weapons ban treaty will not have any positive effect whatsoever on nuclear disarmament whilst

Foreign Policy, 21 October 2016, <http://foreignpolicy.com/2016/10/21/u-s-seeks-to-scupper-proposed-ban-on-nuclear-arms>.

³ Statement by Vladimir Yermakov of the Russian Federation, United Nations General Assembly First Committee on Disarmament and International Security, New York, 27 October 2016.

⁴ See Reaching Critical Will's assessment of NPT implementation at <http://www.reachingcriticalwill.org/resources/publications-and-research/publications/5456-npt-action-plan-monitoring-reports> and of nuclear weapon modernization at <http://www.reachingcriticalwill.org/resources/publications-and-research/publications/9724-assuring-destruction-forever-2015-edition>.

angering the nuclear-armed states so greatly that they might become even more intransigent about retaining nuclear weapons and make even fewer commitments to disarmament, or that they might even use nuclear weapons or start a nuclear war.

Others have argued that the ban treaty is not a “quick fix” for nuclear disarmament and does not “guarantee” the elimination of nuclear weapons—which is a strange argument coming from countries that support incremental measures on nuclear disarmament, or that have previously championed prohibitions on other weapon systems such as landmines, cluster munitions, chemical weapons and biological weapons.

The reality is that the problem with the ban treaty for these countries is that it is incompatible with the possession of nuclear weapons. A legally binding prohibition of nuclear weapons will stigmatise these weapons. It will draw a clear line around them for what they are—instruments of violent death and irredeemable destruction. It will help make unconscionable the concept of these weapons providing security or preventing conflict or deterring attack. It will create legal, political, and economic obligations on the basis of this stigma. It will change the way nuclear weapons are treated by people, corporations, banks, governments, and others. It will undercut the power, privilege, and profit that the few seek to derive from wielding nuclear weapons of mass destruction.

How will a ban treaty do all this?⁵

A treaty banning nuclear weapons is not a panacea for all problems associated with nuclear weapons. But it has the potential to radically alter the social, economic, political, and legal landscape in which they exist.

An international legal instrument banning nuclear weapons should prohibit its parties, their nationals, and any

⁵ The following section is adapted from A treaty banning nuclear weapons: developing a legal framework for the prohibition and elimination of nuclear weapons, Reaching Critical Will of the Women’s International League for Peace and Freedom and Article 36, April 2014, <http://www.reachingcriticalwill.org/resources/publications-and-research/publications/8654-a-treaty-banning-nuclear-weapons>.

other individual subject to its jurisdiction from engaging in any activity related to the use, development, production, stockpiling, transfer, acquisition, deployment, and financing of nuclear weapons, as well as assistance with these acts under any circumstances. It should provide a framework for the elimination of nuclear weapons within agreed time frames, for those states with nuclear weapons that join. It should also recognise the responsibilities of states to ensure the rights of victims of nuclear weapon use or testing, require decontamination and remediation of affected areas, and provide for cooperation and assistance to meet these obligations.

Some examples of critical provisions include the following.

Use and threat of use. The ban treaty could introduce, for the first time, a universal prohibition under international treaty law against the use and threat of use of nuclear weapons. Some of the nuclear-weapon-free zone treaties include such a prohibition by contracting parties while their protocols prohibit the NPT nuclear-armed states from using nuclear weapons against countries within the zones. But these latter prohibitions are subject to reservations and conditions by those nuclear-armed states. The ban treaty could categorically prohibit its parties from participating in any act related to the use of nuclear weapons. This would also affect arrangements of extended nuclear deterrence, at the essence of which is coordination for the use or threat of use of nuclear weapons.

Development and production. The ban treaty could seek to close a loophole in the NPT that allows states to do everything except manufacture or acquire a fully assembled nuclear weapon. A prohibition on development of nuclear weapons and delivery systems could preclude research on nuclear weapons and the testing of nuclear weapons systems, including subcritical and other means of testing. The ban treaty could also go beyond the NPT through a blanket prohibition on manufacturing or otherwise producing nuclear weapons. The NPT, in articles I and II, only prohibits non-nuclear weapon states parties from manufacturing nuclear weapons and from

receiving assistance to do so, and prohibits nuclear-armed states from assisting, encouraging, or inducing any non-nuclear-armed state to manufacture or otherwise acquire nuclear weapons. The ban treaty could make the production of nuclear weapons illegal for all states parties. It could also prohibit states parties from participating financially or otherwise in the production of nuclear weapons.

Transfer or acquisition. Article II of the NPT limits states from receiving nuclear weapons or taking control over such weapons; the ban treaty would do the same. The ban treaty should also prohibit transit of nuclear weapons through the territory of states parties.

Stockpiling. The ban treaty, unlike the NPT, could categorically prohibit the stockpiling of nuclear weapons by states parties. For countries that are already nuclear-weapon free, the commitment not to possess these weapons would simply be a reaffirmation of their obligations under the NPT, relevant nuclear-weapon-free zone treaties, or national legislation. For nuclear-armed states, a ban treaty could provide for them to join the treaty and to accept an obligation to eliminate their arsenals as soon as possible and within agreed timeframes. The ban treaty would not need to pre-negotiate these provisions, but could see them agreed by states parties as part of the implementation of the instrument. For those nuclear-armed states outside of the treaty, other treaty prohibitions such as those on assistance with prohibited acts could affect their incentives to continue possessing nuclear weapons.

Deployment. The NPT does not prohibit the deployment of nuclear weapons. This has allowed its nuclear-armed states parties to maintain active stockpiles of nuclear weapons at varying levels of alert. It has also allowed some of their allies to maintain active stockpiles of nuclear weapons on their territories with the capability of taking possession and using these weapons within minutes. The ban treaty could prohibit operational deployment by nuclear-armed states parties and could require them to immediately take their weapons off deployment as part of their stockpile elimination plans. And, as with the provisions

of several nuclear-weapon-free zone treaties, a ban treaty could prohibit its states parties from receiving, storing, installing, or accepting deployment of nuclear weapons on their territories. These practical obligations, in conjunction with the prohibition on use, would effectively prevent the threat of use of nuclear weapons, as well as reduce the risks of accidents or illicit acquisition of nuclear weapons or materials.

Assistance with prohibited acts. The ban treaty could require states parties not to assist, encourage, or induce any state, directly or indirectly, in undertaking any act prohibited under the treaty. Such a principle would be important for bringing the treaty to bear even on states that stand outside it. It could compel states to revise aspects of their relationships with nuclear-armed states—making nuclear weapons problematic rather than normal.

A prohibition on assistance with prohibited acts could explicitly include a prohibition on any form of financial or material support to public and private enterprises involved in nuclear weapons activities. Such a prohibition could increase the societal stigmatisation of nuclear weapons by reducing the incentives for private companies to accept any work related to nuclear weapons. It could also compel public funds and foundations from supporting any entity involved in nuclear weapons activities.⁶ In this regard, a treaty ban on nuclear weapons could raise the political and economic costs of maintaining nuclear weapons. However, the treaty could exempt the funding of activities deemed necessary to meet other obligations under the treaty, such as disarmament and securing weapons and related facilities and materials, while meeting stockpile elimination obligations.

⁶ There is already evidence of financial institutions shunning producers of nuclear weapons. In Norway for example the sovereign wealth fund rejects investment in nuclear weapon producing companies. See *Don't Bank on the Bomb*, PAX, 2013. These practices of avoiding investment would be likely to increase once a treaty prohibition has been put in place at the national level.

As a framework for maintaining a nuclear-weapon-free world, the ban treaty could also include positive obligations for states parties. Potential principles could include measures related to the rights of victims, decontamination, and cooperation and assistance.

Rights of victims. The treaty could articulate the responsibility of states parties to ensure the rights of victims of nuclear weapons—whether from use, accidental detonation, or from weapons testing—and to provide necessary assistance in this regard. Such an obligation would build on the legal developments that have taken place on conventional weapons regulation and in areas such as the rights of persons with disabilities in the period since the other treaties prohibiting weapons of mass destruction were adopted.

Decontamination and remediation. The detonation of a nuclear weapon, whether in conflict or testing or by accident, creates distinct and challenging patterns of long-term contamination. States parties to a ban treaty could recognise a responsibility to protect their populations from any such contamination through necessary measures to exclude populations from the area and, over time, through processes of decontamination and remediation. Whilst recognising that nuclear contamination presents distinct technical challenges, such a principle is important to make the threat and the reality of harm from nuclear weapons a thing of the past.

Through these provisions, an international agreement prohibiting nuclear weapons could have a variety of effects on the policy and practice of states.

Legal. A ban treaty would establish a clear legal standard rejecting nuclear weapons. The existence of a ban treaty would offer states opposed to nuclear weapons an opportunity to formalise a categorical rejection of the use or possession of nuclear weapons by anyone under any circumstances. Establishing a clear rejection of nuclear weapons would enhance the stigma that already exists against these weapons. For individuals and for states, stigma shapes how certain weapons are recognised as unacceptable and incompatible with

the identities they wish to hold in the world.⁷ The process of banning nuclear weapons would require governments to decide whether they want to continue to support nuclear weapons or reject them entirely. The existence of an international treaty that poses this question would make a significant difference in international and national debates. States opposed to the ban will have to justify their position to domestic, regional and international audiences.

Political. Accession to a treaty by some states can generate the need to coordinate policy amongst allies, which in turn can raise the political costs of acts that breach the treaty and facilitate behaviour that is in compliance with the treaty's provisions.⁸ States parties that belong to alliances that envision the use of nuclear weapons could be obliged to effectively renounce their participation in any doctrine or policy involving the stockpiling, deployment, use, or threat of use of nuclear weapons. While joining the ban treaty would not necessarily have to require any state to exit its alliance, this principle could compel them to ensure that their participation is compatible with their commitments and policies under the ban treaty.⁹ Similarly, any bilateral arrangement involving hosting of nuclear weapons would need to be revisited. The ban treaty could make it clear that nuclear weapons are illegal and states parties cannot plan to benefit from or support their use or continued possession. In this regard, relationships of "extended nuclear deterrence," in which a nuclear-armed state pledges to use nuclear weapons to "protect" an ally, would likely need to be renounced by states parties.

⁷ See, for example, Nina Tannenwald, "The Nuclear Taboo: The United States and the Normative Basis of Nuclear Non-Use" in *International Organization* 53.3, Summer 1999, pp. 433-468 and Richard Price, "A Genealogy of the Chemical Weapons Taboo" in *International Organization* 49.1, Winter 1995, pp. 73-103.

⁸ Adam Bower, Memo on Additional Protocols I and II to the 1949 Geneva Conventions, prepared for Article 36, 20 January 2014.

⁹ Stein-Ivar Lothe Eide, "A ban on nuclear weapons: what's in it for NATO?" *International Law and Policy Institute*, Policy Paper No 5, January 2014.

Economic. The ban treaty could have a significant impact on nuclear-weapon modernisation programmes and financial investments in nuclear weapons, delivery systems, and related infrastructure. Divestment focuses on financial institutions such as banks, asset managers, insurance companies, and pension funds that invest in nuclear-weapons-producing companies. The divestment campaign accompanying the treaty banning cluster munitions has been successful in affecting the financial interests of corporations producing these weapon systems and related components. Some governments have already begun divesting from nuclear weapons producers. Over time this will undermine the benefits these companies currently derive from manufacturing these products. As more pension funds, banks, and public investments are removed from nuclear weapons producers, the political effects will increase.¹⁰

Social. An international process to develop a treaty banning nuclear weapons could provide a very different backdrop for national discussions on nuclear weapons. Even if such a process were to be dismissed as irrelevant by the nuclear-armed states, it would nevertheless provide a strong entry point for critiquing the wisdom and legitimacy of investing large sums of money in weapons that large parts of the world consider immoral and unacceptable, and have deemed to be illegal.

Conclusion

The potential of these practical impacts of a nuclear weapons ban treaty frightens states that want to retain nuclear weapons. It is this that has driven some of the extreme rhetoric against the ban treaty and its proponents. It should not, of course, be this way. The NPT does not confer legitimacy on the possession of nuclear weapons, or on the inclusion of nuclear weapons in security doctrines. On the contrary, the NPT seeks to prevent states from acquiring nuclear weapons and commits those that already have them to disarm.

¹⁰ Greg Mello and Ray Acheson, "The effects of a treaty banning nuclear weapons on US policy," Los Alamos Study Group, 2014, forthcoming.

By insisting on their “right” to inflict massive nuclear violence, the nuclear-armed states and their nuclear-supporting allies have created a division amongst the United Nations membership. They have forced the hand of the majority of states, which have gone along for decades in good faith with the agendas set by the nuclear-armed. This majority is now ready to take actions that align with its commitment to peace, justice, and security for all.

For this, they are being attacked and ridiculed and threatened by most of the states that wield nuclear weapons. They are being presented as interfering with matters that they do not understand or have no stake in. They are being told that they are the problem, not nuclear weapons or those that possess them. They are treated as if they are undermining international law and agreed commitments, when in reality the opposite is true.

This reflects a broader societal tendency from the “powerful” to try to stop those who act to hold them accountable for committing or threatening violence or injustice. This imbalance of power, rooted in established systems of patriarchy and militarism, is used relentlessly and in various ways to try to silence those that believe a different kind of world is possible.

This can’t be allowed to succeed. “There comes a time when choices have to be made and this is one of those times,” said the representative of Ireland in her remarks on the ban treaty in October before the vote on L.41. “Given the clear risks associated with the continued existence of nuclear weapons, this is now a choice between responsibility and irresponsibility. Governance requires accountability and governance requires leadership.”

The act of prohibiting nuclear weapons is an act of nonviolent, positive, courageous revolt. It is transformative. It is long-fought and hard-won and it is certainly not over. It is a part of the path of a long road of activism, sacrifice, and courage from people the world over for decades. It is an important part, a critical node, and it will require more courage—from

governments as much as from activists—to carry forward successfully.

Negotiations are set to begin from 27 to 31 March 2017 and continue from 15 June to 7 July 2017. It will be up to states that support the negotiation of this instrument to lead the way, coming together at this conference with ideas and suggestions to develop the strongest treaty possible, a treaty that will be a critical tool in facilitating the elimination of nuclear weapons. It will then be up to its states parties to implement it in ways that make a meaningful difference.

We have a big task ahead of us. The first bold step, establishing negotiations for the prohibition of nuclear weapons, has been taken. The struggle will continue throughout 2017 and beyond—but it is a struggle that states, civil society, and the world are ready for.

Author biographies

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Ira Helfand, MD, has worked for many years as an emergency room physician and now practices internal medicine at an urgent care centre in Springfield, MA. He is a Past President of Physicians for Social Responsibility and is currently the Co-President of the global federation of the International Physicians for the Prevention of Nuclear War, which was awarded the Nobel Peace Prize in 1985.

Rebecca Johnson, PhD, founded the Acronym Institute for Disarmament Diplomacy while working in Geneva on the Comprehensive Nuclear-Test-Ban Treaty negotiations of 1994, and continues to direct its research and analysis, focusing mainly on women, peace and security, disarmament agreements and ways to demilitarize international relations and protect people and our environment. Dr. Johnson lived at the Greenham Common Women's Peace Camp during its most crucial campaigning period, from 1982 to 1987, and went on to coordinate Greenpeace International's nuclear test ban and plutonium campaigns. She currently serves with several organizations and governance bodies, including the Campaign for Nuclear Disarmament (CND) and the International Campaign to Abolish Nuclear Weapons (ICAN), and was President of ICAN from 2010 to 2014.

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Nick Ritchie, PhD, researches and teaches in the areas of international relations and international security at the University of York. His particular focus is on nuclear disarmament, proliferation and arms control and US and UK national security. After completing his thesis at the University of Bradford in 2007 on the evolution of US nuclear weapons policy after the Cold War, Dr. Ritchie spent four years researching and teaching at Bradford's Department of Peace Studies before joining York in 2011. He previously worked for five years at the Oxford Research Group, an independent non-governmental organisation working with policy-makers and independent experts on the challenges of global security and nuclear disarmament.

Susan Southard, MFA, is the author of *Nagasaki: Life After Nuclear War*, the recipient of the 2016 Dayton Literary Peace Prize and the 2016 Lukas Book Prize, sponsored by the Columbia School of Journalism and Harvard University's Nieman Foundation for Journalism. The book was also named a best book of the year by *The Washington Post*, *The Economist*, the *American Library Association* and *Kirkus Reviews*. Southard's work has appeared in the *New York Times*, the *Los Angeles Times*, *Politico* and *Lapham's Quarterly*. She has taught nonfiction seminars at Arizona State University and the University of Georgia, and directed creative writing programmes for incarcerated youth and at a federal prison for women in Arizona. Southard is the founder and artistic director of the Phoenix-based Essential Theatre, now in its 27th season.

Kathleen Sullivan, PhD, has been engaged in the nuclear issue for nearly 30 years, and has worked internationally as an educator for disarmament focusing primarily on two distinct audiences: young people and atomic bomb survivors (hibakusha). Currently, she is the Program Director for Hibakusha Stories, an arts-based initiative that has brought atomic bomb survivors into the lives of some 32,000 New York City High Schools students. As an education consultant to the United Nations Office for Disarmament Affairs, she developed the disarmament education web portal for the United Nations Cyberschoolbus website and co-wrote with Peter Lucas *Action for Disarmament: 10 Things You Can Do!* (2014), recently translated into Japanese and Korean.

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